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THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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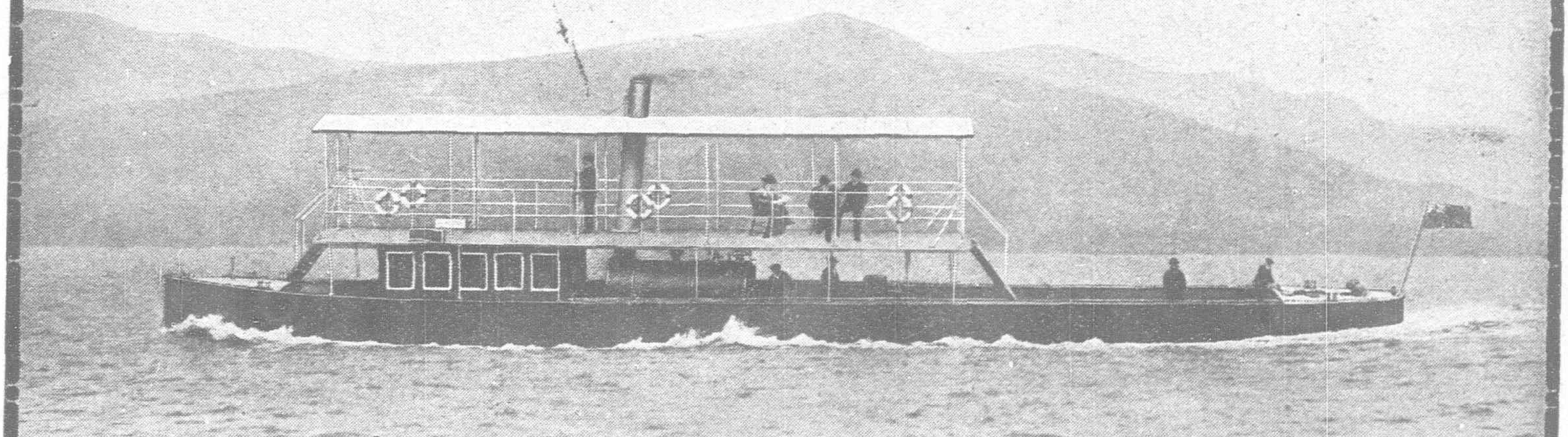

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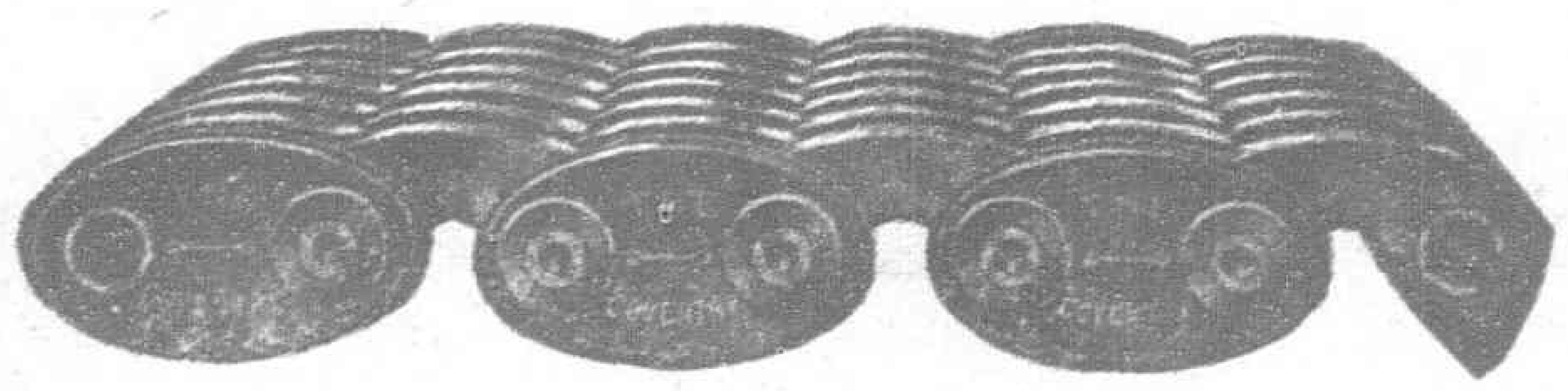

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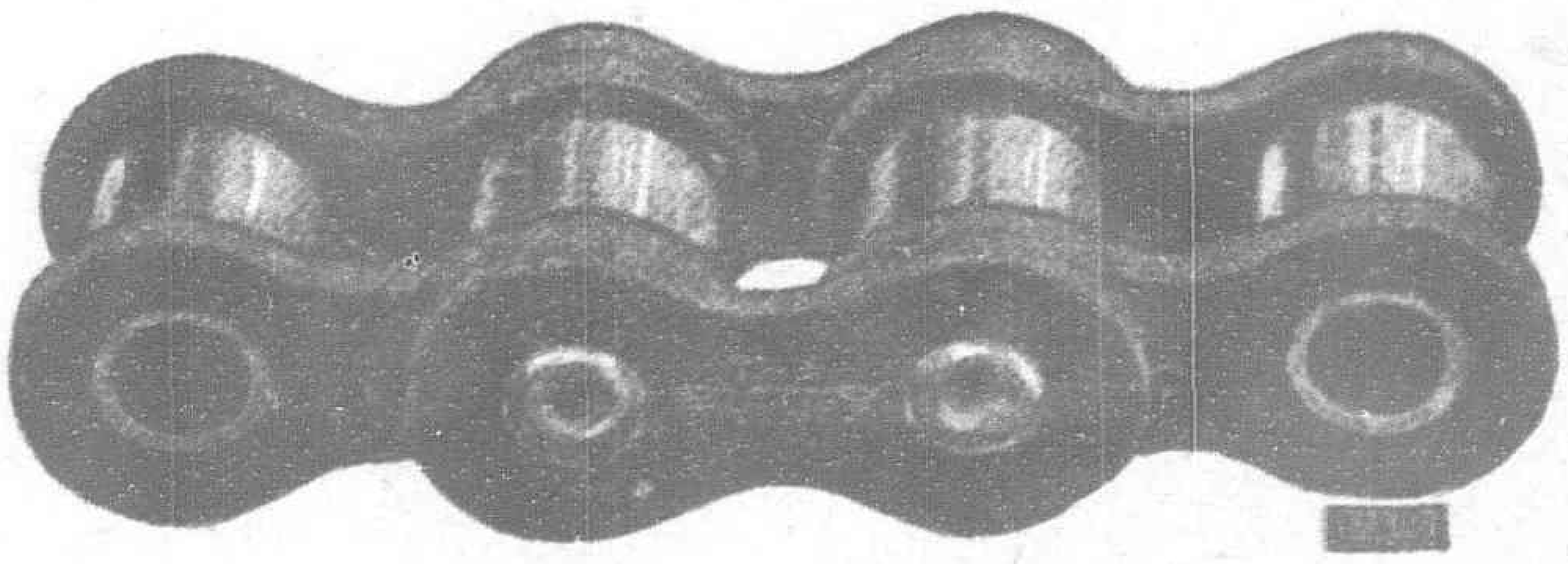


The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XV SHANGHAI, SEPTEMBER, 1919 No. 9

A Year's Working of China's Railways

Statistical Report for 1917

The Ministry of Communications has circulated its report upon the Chinese Government Railways covering the year 1917. Although this has come from the press several weeks later than the report from the Department of Posts for the year 1918, there are other conditions which make the appearance at this time of this report upon railways a matter of some satisfaction. The report for 1915, the first to be issued covering a full year, did not appear until August of last year, or two years and seven months after the close of the period to which it referred. The report for 1916 appeared during April of this year, or two years and three months after the close of the period to which it referred. Now, less than four months later, this report for 1917 appears. Although a year and seven months late, it marks the public reception of three annual reports within a period of twelve months—which indicates that the bureau charged with this work is headed in the right direction. It will be interesting to see if the process of catching up with the calendar will be fast enough to bring out the report for 1918 before the end of the current year. To our view, the aim should be to bring out these reports not later than nine or ten months after the year to which they refer is closed. There are difficulties in the way of equalling the record in some foreign countries, but if the Department of Posts can report at the end of six months, the Department of Railways ought to be able to report at the end of nine—in spite of the fact that its reports are much more elaborate and complicated.

The general results for the year 1917 were given on page 386, the May number of the FAR EASTERN REVIEW. For the sake of completeness and continuity some of these general results will be repeated herein. The financial results of operations for the year compared with those of the previous year are stated as follows:—

	1917.	1916.	Increase.
Operating Revenues	$63,873,703.67	$62,761,720.23	$1,111,983.44
Operating Expenses	30.040.564.50	28,842,277.93	1,198,286.57
Net Operating Revenues ..	33,833.139.17	33,919,442.30	Dec. 86,303.13
Income Debits	13,303,440.24	13,967,945.92	Dec. 664,505.68
Income Credits	1,100,496.79	775,258.89	Inc. 325,237.90
Net Income Debits ...	12,202,943.45	13,192,687.03	Dec. 989,743.58
Surplus for the Year ...	21,630,195.72	20,726,755.27	Inc. 903,440.45

It will be remembered that floods interrupted through traffic on the Peking-Hankow Line for about three months of the summer and fall of 1917, and that the north end of the Tientsin-Pukow was cut off from the rest of the line for a similar period. In addition to this, there was considerable political unrest, the Chang Hsun rebellion, and the beginning of the disaffection of the South. The latter resulted in the confiscation of the Canton-Samshui Line with its annual surplus of nearly $400,000 by the Southern authorities. This line therefore made no report, and except for its kilometrage and balance sheet data for the year 1916, its statistics are omitted from the report. The Canton-Kowloon was not confiscated, but whether forbearance in that case was caused by the foreign interest in the Canton-Kowloon or by the fact that it operates at a deficit is not disclosed. Under these conditions the gain in surplus for the year of approximately $1,300,000 indicates a healthy fundamental position for railways in China.

Further analysis of the report indicates a condition even better than would be suspected from the bald report. Operating revenues contain three items which are more nominal than real These are revenue from Government (principally military) transportation, from carriage of service stores such as coal, sleepers, and repair material, and from the transportation of materials for other Railways. The first of these results in a mere book-keeping transfer between the railways concerned and the Ministry of Communications. The second results in a mere book-keeping transaction within the railway itself—a credit to revenues and a debit to expenses. The third results in a credit to the revenues of one government line and a debit to the expenses of another. If these combined items be eliminated, the actual commercial revenues of 1917 are $59,432,915.77 compared with $56,663,815.83 in 1916, or an increase of $2,669,099.94. Then if allowance be made for the Canton-Samshui figures, also, there is found to be an actual gain in commercial business on the lines which reported of over $3,156,000. This is a gain of over 5 per cent.—which for a bad year is quite encouraging.

In this connection, the most hopeful feature, perhaps, is the decrease in revenue from Military transportation. In 1916 this figure stood at $4,400,000—in round numbers. In 1917 it was only $2,957,000. Perhaps things are improving after all. There is no chance for the bilious individual to suggest that these figures merely mean that less money was collected, not that the railway was interfered with less. These figures have nothing to do with collections. They are merely the figures which the railway itself assessed against the Government. If there is any dispute in the figures, the differences will appear in following years under Profit and Loss. To be sure, these totals contain nothing for the use of goods wagons used as living quarters.

One further service which the railways render the Government is not reflected in the report. This is the carriage of mails. No figure is given in the report for this item, but it is stated to be merely nominal. Observation makes it evident that this service is considerable. Every fast passenger train has one or more carriages for the exclusive use of Posts, while reserved compartments and space for pouches and baskets make every slower train yield its contribution. Indeed the parcels post practically means that the railways are compelled to haul free matter which otherwise would be carried at a good price in the railway's own parcels service. While the Department of Posts was struggling for existence, it may have been good policy to subsidize it by means of this forced service from the railways. But for several years the posts have been operating at a goodly profit. How much of this profit is due to this free service, we are unable to state. But it would seem that means should be taken by the Ministry of Communications to find this out and make its findings public through these reports. At any rate it would be only sound accounting to adjust this matter between these two co-ordinate departments of its own jurisdiction. It may be wise to continue to make the railways pay a subsidy to the posts, but at least these two departments should have some idea of how much this subsidy amounts to.

Operating expenses increased, in round numbers, $1,200,000. Over thirteen pages are given in the report to the analysis of this fluctuation, treating the subject both by lines and by departments. From the standpoint of many government reports, this *treatment is rather full, but in a country where even the best* informed are mere tyros upon the subject of railway management full discussion is to be welcomed. Probably no subject of applied economics is of more importance in China than that of railway transportation. The economics departments of colleges in China are rapidly extending in answer to a demand on the part of students for instruction along these lines. The analysis of operating expenses contained in this report is hereby commended to teachers of such courses as valuable material.

In explanation of the increase in operating expenses little in the way of new tendencies is revealed. Every department except that of maintenance of way participated in the increase. However, general administration accounted for $542,000 out of the $1,200,000 increases—$370,000 being found in increased bonuses to employees. The decrease in maintenance of way expense is something over $200,000 and is more than explained by the decrease in sleepers (or ties) replaced in track in which there was a decrease of $362,000, or about 19 per cent. As the price of sleepers was considerably higher in 1917 than in 1916, the actual number of renewals was less than that in 1916 by a percentage considerably larger—which means that this item will bear careful watching during following years.

Maintenance of equipment expenses amounting to $6,308,790.08, contain $1,837,818.66 depreciation charges.

A pretty clear case for the re-organization of the Administrative departments of several of the smaller lines, and perhaps one or two of the larger ones, is made in a summary which compares the cost of this department per train kilometre with the total operating expense per train kilometre. The summary is introduced by a paragraph containing the following:

"Theoretically, Administration, which is the largest division of general expense, is intended to secure the best use of the property possible and to prevent needless expense. Hence it is possible that with a parsimonious policy of providing an inadequate number of officers or salaries insufficient to secure a high order of ability, general expense might be reduced with the result that far greater sums would be wasted in other departments. . . . However, it is quite apparent from this summary that high Administrative expense has in most cases failed to effect final economies."

EXPENSE PER TRAIN KILOMETRE, ADMINISTRATIVE AND TOTAL, BY LINES.

Name of Line.	Expense per Train Kilometre. Administration.	Total
1. Peking-Mukden	$0.09	$1.24
2. Shanghai-Nanking	.11	1.09
3. Peking-Hankow	.13	1.33
4. Taokow-Chinghua	.15	1.02
5. Kaifeng-Honan	.15	1.29
6. Shanghai-Hangchow-Ningpo ...	.16	1.80
7. Tientsin-Pukow	.17	1.41
8. Chuchow-Pinghsiang	.17	1.49
9. Peking-Suiyuan	.20	2.23
10. Chengting-Taiyuan	.20	1.45
11. Kirin-Changchun	.20	1.91
12. Canton-Kowloon	.31	2.09
13. Changchow-Amoy	.34	2.02
Chinese Government Railways ...	.14	1.40

The lines with sparse traffic will rejoin, of course, that the train kilometre basis is unfair in the comparison. There seems to be a delusion that a small road needs just as elaborate an organization as a large one. This argument is effectively answered by the high position in the list above of the Taokow-Chinghua —a line which has the fewest train kilometres per kilometre of line of any in the Chinese system (except one), is also one of the shortest lines, and hauls the heaviest train loads of any but two.

Out of every dollar of operating revenues some forty-seven cents were required to pay operating expenses. This relation of operating expenses to operating revenues is usually referred to as "Operating Ratio" and sometimes as "Operating percentage." Obviously it is a very convenient average to use in comparing the success of the different lines, and of the same lines from year to year. This average shows a slight increase over 1916 but is much lower than in 1915 when it stood at 53. *Comparisons with foreign countries redound to China's credit.* The 1916 figure for Japan was 52, India's is about the same, while European and American railways average between 60 and 70.

Another interesting comparison is afforded in a summary giving the operating expense of performing 1,000 units of service. In this table no units are included except passenger kilometres and ton kilometres. The service rendered in shunting, carriage of parcels, telegraphs, etc., is ignored. Combined, these ignored services account for a little over five per cent. of total revenues. But it is impossible to include them on any practicable basis, and the omission is not serious. Again, it may be urged with propriety that the passenger kilometre and the ton kilometre are not similar units, and therefore that varying proportions of these upon the different lines would impair any comparison which might be attempted. As the results come out however, the fluctuations occur quite contrary to any hypothesis of this sort. Of course it must be recognized that upon lines with severe grades or curves, where fuel expense is high, etc., that there will be higher costs. But the purpose of the comparison seems to be less to explain differences than to show that they exist—and they seem to exist in many cases with but little opportunity for explanation. It appears that operating expense per 1,000 units decreased 40 cents, compared with 1916—from $6.16 to $5.76. The only lines showing important increases in this cost were the Peking-Hankow—$5.94 to $6.32—and the Peking-Suiyuan—$13.43 to $15.47. In the following recapitulation there is given for each line both the operating ratio and the average operating expense per 1,000 units of service.

Name of Line.	Operating Ratio.	Operating Expense per 1,000 units of service.
1. Peking-Hankow	37.4	$6 32
2. Peking-Mukden	38.4	4.75
3. Taokow-Chinghua	41.3	5.04
4. Kaifeng-Honan	46.3	8 64
5. Chengting-Taiyuan	50.8	13.22
6. Tientsin-Pukow	50.9	5 74
7. Shanghai-Nanking	52.8	3 73
8. Peking-Suiyuan	68.5	15.47
9. Kirin-Changchun	69.7	15.17
10. Shanghai-Hangchow-Ningpo	81.2	7 48
11. Chuchow-Pinghsiang	82.3	7 89
12. Canton-Kowloon	104.6	8.89
13. Changchow-Amoy	159.5	16.78
Chinese Government Railways...	47.0	5.76

The low operating ratio of the Chengting-Taiyuan standing opposite the high expense per 1,000 units is explained by rates which are among the highest in China. The reverse is the situation on the Shanghai-Nanking which has the distinction of the lowest costs per 1,000 units of any line in China. A similar explanation is in order for other comparisons which might be made.

Net operating revenue, that is, the remainder after the payment of operating expenses—amounted to 8.2 per cent. upon the investment in the property of the combined lines. The Peking-Mukden had the largest return, 17.1 per cent., the Peking-Hankow being next with 11.8 per cent. At the other end of the list, two lines, the Canton-Kowloon and the Changchow-Amoy could not pay operating expenses. Except for these two and the Shanghai-Hangchow-Ningpo, every line could pay every obligation to outsiders. An additional three, however, could not have paid 5 per cent. upon the equity in the property owned by the government if this had been required. These lines were the Kirin-Changchun, the Chuchow-Pinghsiang and the Peking-Suiyuan. The system as a whole, however, was in a strong nominal position. Interest charges decreased by over $2,325,000, due principally to the favorable rates of exchange, which in effect reduced the interest rate to 3.58 per cent. upon the balance sheet statement of funded debt. Net operating revenue, therefore, was sufficient to provide $2.62 for every dollar of interest or other income charge which had to be met. And the surplus for the year was equivalent to 19 per cent. upon the Government's investment in the combined lines.

In all of the foregoing no account has been taken of the fact that revenues contained at par value a large number of notes issued by the Peking branches of the Bank of Communications and the Bank of China, which notes were inconvertible in large quantities, and in small quantities only at a heavy discount. On the other hand expenses were paid largely in silver. In order to secure sufficient silver for this purpose, a considerable quantity of bank notes were sold, for the discount upon them amounted to $2,172,758.53. The report, however, explains that even this loss does not fully represent the gravity of the situation, for the reason that a large number remained in the treasuries of the four principal northern lines, which would probably have to be disposed of at a loss in the future. Over $11,000,000 out of $20,000,000 cash in the treasuries of the combined lines consisted of such inconvertible notes.

The report for 1917 gives for the first time the debits and credits to Profit and Loss. The Profit and Loss account covers entries which arise out of transactions of previous years and hence do not pertain to the operations of the current fiscal year, and other loses and gains which, if included with the regular accounts, would distort the meaning of their balances. An example of the latter is the extraordinary losses caused by the floods of the year 1917. But the majority of the items reported in 1917 are concerned with bills for military transportation which were written off as disallowed, or else former disallowed items which were finally allowed. All told the net result of the Profit and Loss transactions was to reduce the surplus for the year by something over $833,000.

The most important capital transactions for the year were the redemption of mortgage bonds to the extent of $2,630,063.95 upon four lines, the Peking-Hankow, the Peking-Mukden, the Chengting-Taiyuan and the Taokow-Chinghua; and on the other hand the contracting of a new loan upon the Kirin-Changchun which increased the debt upon that line by $3,579,710.37. What the Government did on this line, was in effect to sell its permanent Government investment in it—all except $421,000 odd. When it is realized that there still remains nearly $114,000,000 of permanent Government investment in the Government lines, it can be appreciated what opportunities are still left for an administration with ambitions toward high finance if it were to follow the Kirin-Changchun example.

During 1917 $3,427,404.03 was added to the cost of road and equipment of which $2,473,558.74 was met by appropriations from revenue. Rolling stock and buildings of various sorts were the two leading forms which these additions took, but the usual small jobs covering every conceivable part of the property, in the aggregate amount to more than either of these two leading heads. In this connection it should be remembered that, according to the uniform classification of accounts, prescribed by the Ministry of Communications in 1915, whenever a single job amounts to less than $2,000 it is charged to operating expenses under a head entitled new minor works, and does not appear under these additions to property. The report for 1917 does not state the aggregate under new minor works.

The subject of equipment shortage has been treated so many times in the columns of the FAR EASTERN REVIEW that readers will undoubtedly appreciate an account of what the report for 1917 has to offer on this point. During the year, seventeen road engines and two shunting engines were added to the list. This is an increase of less than 3 per cent. in number, but as the engines were all of heavy type it was equivalent to an addition of 4 per cent. in tractive power. By means of a heavier average train load—an increase from 227 to 244 tons in the case of goods—an actual decrease in train kilometres was accomplished amounting to 2 per cent. While total locomotive kilometrage apparently increased, road locomotive kilometrage decreased and the kilometres run per road locomotive decreased from 45,717 in 1916 to 43,772 in 1917. A considerable portion of this decrease is due to the fact that for three months the Peking-Hankow locomotives were practically tied up by floods. During the remaining months of the year they were apparently busier than in 1916. The Shanghai-Nanking was forced to run its engines 65,324 kilometres against 62,380 in 1916. Compare this with 43,637, the average in America, and 40,583 the average in England, and the strain upon the motive power of this line is immediately apparent. Yet the Shanghai-Nanking did not receive any of the new power. The Peking-Hankow received ten of the new road engines and the Peking-Suiyuan received the other seven. The Peking-Suiyuan locomotives ran an average of only 22,540 kilometres. Why that line should receive additions to this class of equipment when the Shanghai-Nanking whose locomotives average three times as much work did not, is one of the yamên mysteries which the report does not reveal.

Under the discussion of performance by passenger carriages there may be found a naive remark. In a tabulation just preceding, the number of passenger kilometres has been divided by the number of carriage seats to find out the work done by each seat. Then this yearly average has been divided by 365 to ascertain the average daily performance. The report then reads

"The best performance per seat is 130 kilometres per day and the average performance is only 97 kilometres per day. If passenger cars run at the rate of only 20 kilometres per hour, this would indicate either that they are in motion not more than six hours per day or else *many seats are not occupied by paying passengers a considerable portion of the time in motion.*"

Anyone who has seen one of these passenger trains knows that the speed equals at least 20 kilometres per hour. We believe the managements of the lines keep the carriages in motion more than six hours per day. We have seen enough of these trains to know that the seats are occupied, and we have no cause to ask: Can it be that the passengers are not "paying"? On the Tientsin-Pukow railway in 1917 none of the minions of the militarists paid, and they more than half filled every passenger train.

But the principal shortage of equipment occurred under goods wagons. It is gratifying to know that 100 new wagons were added to the stock, but the gratification changes to chagrin when it is found that, because of the rebuilding of old wagons, the net gain in capacity is only about 1,000 tons, which leaves the carrying capacity of the entire supply still below that reported in 1915. In the meantime the tonnage handled has increased 25 per cent. Naturally this has required increased performance from the car supply available. This performance has been computed for 1917 in the same manner as for 1916. In brief, this is to take tons of carrying capacity of wagons owned and add or subtract carrying capacity gained or lost by interchange or rentals, then using this figure as a divisor and the number of tons carried as a dividend, compute the average number of tons carried per ton of capacity during the year. This is practically equivalent to the average number of times each car was loaded to capacity during the year. In the same manner the average number of ton kilometres per ton of carrying capacity is computed. If the first named average be multiplied by two, the number of days required for loading and unloading is obtained. This number subtracted from 365 gives the number of days left for running. (In certain cases only one day is allowed for loading and unloading). Then if these "running days" be divided into the number of ton kilometres carried per ton of carrying capacity during the year, an average is given which is called "Ton kilometres per ton of carrying capacity per running day." This average the report avers is "large or small according to the degree in which that car was active or inactive, fully loaded or partially loaded, moving under tonnage or moving empty."

Measured on this basis, the goods wagons of the Government railways made an average of 49.1 in 1917 compared with 46.9 in 1916 The Shanghai-Nanking leads the list with 94.0 and, of the goods carrying lines, the Shanghai-Hangchow-Ningpo foots the list with 10.9. These two lines were connected throughout the year 1917, but apparently there was no attempt to relieve the evident shortage on the older line from the surplus on the Shanghai-Hangchow-Ningpo. These two lines are under the same set of officers. What is the explanation? Another set of comparisons is presented in this connection. The Peking-Hankow and the Peking-Suiyuan are under complete control by the Ministry of Communications. The Peking-Hankow shows an average performance of 62.5 in spite of flood interruptions. The Peking-Suiyuan shows only 15.6. The earning value of wagons on the Peking-Hankow during the year is reported to be approximately 70 cents per ton per day, or $21 for a 30-ton wagon. Why was not the excessive Peking-Suiyuan wagon supply called upon to help out the Peking-Hankow? That is another of those mysteries. There was a time when such failure to act was excusable in view of the fact that there was available no trustworthy information. But now the information is available.

One further subject, upon which information is now available, should tempt the Ministry of Communications into some affirmative action. That is the subject of employees. The last table in the report gives the number of employees in each department by lines. The discussion upon it relates that there are difficulties in the way of absolute certainty in classification. But certainly there is little likelihood that a head office clerk will be classified as locomotive mechanic. And why, for example, should the Kaifeng-Honan require 124 men and the Chuchow-Pinghsiang require 112 men per 100,000 train kilometres for repairs to rolling stock when the Shanghai-Nanking gets along with 48 and the Tientsin-Pukow with 45? The standard of repair will not account for the difference. Why does the Peking-Mukden require 5.5 men per kilometre of line to keep its roadway in repair when the Cheng-Tai can do a much more difficult piece of work and do it just as well with 2.6 men? Every department will yield similar queries. There may be reasons for some of these disparities, but does the Ministry of Communication know what they are? We venture the assertion that this is the first intimation which the Ministry has had that they existed, let alone the reason for them. It will be interesting to watch whether or no the Government will exercise the power which this information puts into its hands for the purpose of regularizing these conditions, and if it does how it will go about it. To simply order a reduction of forces upon a given railway so as to put it in line with other roads would be to involve the road in question with consequences as serious as those to the occupant of the procrustean bed. On the other hand it is not unlikely that some enterprising department chiefs who find their forces averaging low will see in this tabulation an opportunity for the appointment of additional friends and relatives. Information is dangerous if not used wisely. What should follow is a careful study of the organization upon each line so as to bring to each department of each line the best experience of the best organized department in the entire system. There is scarcely a single railway upon which there is not at least one department which compares badly with the same department upon some other line. This points the way very clearly to the necessity for professional conventions of the heads of similar departments under the auspices of the same respective division of the Ministry of Communications for an annual exchange of opinion and experience.

The more significant statistics for the year are as follows:—

		Per kilometre of line.		
	Total.	1917.	1916.	1915.
Investment Assets	$411,616,123	$75,514	$75,402	$75,225
Operating Revenues	63,873,703	11,713	11,425	10,477
Operating Expenses	30,040,564	5,509	5,250	5,556
Operating Ratio	47	(1916-46)	(1915—53)	
Net Operating Revenue... ...	33,833,139	6,204	6,175	4,921
Surplus after Fixed Charges ...	21,630,195	3,948	3,773	1,841
Train Kilometres	21,374,253	3,918	3,975	3,763
Locomotive Kilometres	31,683,464			
Passengers Originated	23,615,329	(1) 4,331	5,217	4,633
Passenger Kilometres	2,128,327,372	390,302	375,827	349,160
Average Passengers per train ...	211	(1916—201)		
Average rate per passenger kilometre	1.07 cents	(1916—1.06)		
Tons of Goods Originated ...	16,475,216	3,021	3,031	2,720
Ton Kilometres	2,766,840,594	502,507	476,969	413,289
Tons per train	244	(1916—227)	(1915—206)	
Average rate per ton kilometre...	1.29 cents	(1916—1.33 cents)		
Kilometres of Line operated ...	5,453	(1916—5,492)		

(1) Decrease due to absence of Canton-Samshui figures.

The World Port for Central China

In our last issue, in Dr. Sun Yat-sen's series on the Development of China, the subject of a great port for Central China was mooted. As our readers will remember, the case for a Yangtze estuary port was first presented in the "Report of the Future Development of the Shanghai Harbour" by three experts, issued in April, 1918, by the Whangpoo Conservancy Board in which China's urgent need for a "World Harbour" in the neighborhood of the Yangtze Estuary was convincingly proved.

The Whangpoo Conservancy Board in April this year announced that, on the recommendations of the above report and on the request of the consultative Board and of the various Commercial Bodies in Shanghai, the Board has decided to carry out an investigation which will include all possible schemes for a first class port. The various projects which Dr. Sun now puts forward are already in principle embodied in the programme of investigation which the Board has published. (See our issue of April, 1919). His two main schemes, a harbor on the southern bank of the Pootung Peninsula and the training of the "North" or Shaweishan Channel of the Yangtze, are definitely covered in the investigation. His notion of a wet dock in the lower Whangpoo was also foreseen. A scheme to make on the Hangchow Bay a *port de vitesse* was definitely formulated by one of the reporting experts, Mr. P. G. Hornell, as early as in August, 1917. As to the scheme for deviating the Whangpoo by joining the Seven Mile Reach to Kaochiao, thus cutting out the whole of the present harbor, and leaving alone its evidently enormous cost, we cannot imagine any idea, which, if carried out, would more effectively fail to make use of and destroy all the interests vested in the present Shanghai water front. In considering the question and possibility of realizing a large ocean port scheme for Central China, we feel that one cannot afford to overlook the fact that the trade, business and enterprise of Shanghai and its vested interests form the only possible nucleus and guarantee for such a scheme. In case the deep water port cannot actually be developed at and within the actual limits of present Shanghai, it must at least be directly connected with Shanghai and serve as its new harbor for deep draft ships. Any scheme which does not take this into consideration will always belong to the *chateaux en Espagne*, and not to the realm of reality.

In the meantime, it is as well to consider the subject as *sub judice*, as the investigation of the Board, which is now proceeding, covers within the widest range all technical possibilities for a Central China Port. The results will be submitted to an International Committee of engineers of high repute from the home countries, and there is very little gained by anticipating the results. It is, however, very promising to find Dr. Sun as an advocate for a well-defined and largely conceived harbor and communication system for China—and, while he may leave the actual technical solutions to the experts and engineers, it is hoped that he will make his countrymen realize the need for something being done, before it is too late, for the ocean-borne trade and shipping of China.

A New Sino-French Enterprise

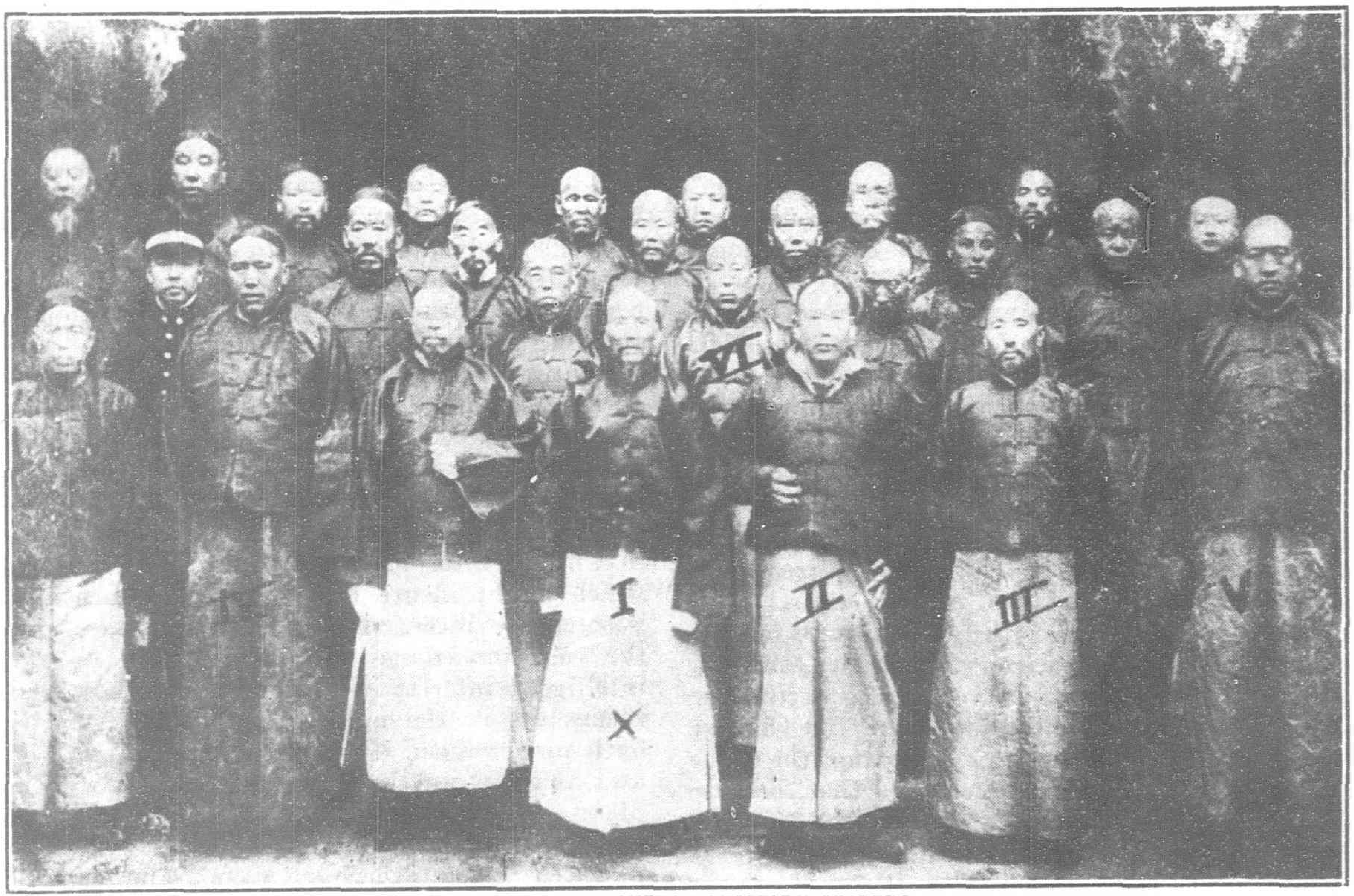
The "*Societe Franco-Chinoise de Constructions Metalliques et Macaniques* (*Kiou-Sin*) opened its offices in Shanghai on June 1, 1919, marking the beginning of the career of another important Sino-French enterprise. This company is capitalized at Shanghai Tls. 1,200,000, the Chinese Government furnishing half of the sum, viz., Tls. 600,000, and the Messageries Maritimes Co. and the Schneider Co. of Paris, the other half. The capital has now been fully paid up. The project was promoted by the Schneider Co. to take over the Kiou-Sin Engineering Works of Shanghai owned by Nicolas Tsu, a Chinese Engineer. After taking over the Kiou-Sin Engineering Works, the new company plans to enlarge their plants and extend the scope of their business. The Company has twelve Directors, six of whom are Chinese. The Peking Government has designated six prominent Chinese business men as Directors of the Company. Mr. Bridou, Agent General of the *Messageries Maritimes pour l'Extreme Orient*, is General Manager, and Mr. Wei Han, formerly Director of the Foochow Docks, is Assistant General Manager of the Company. The main business of the company is shipbuilding, but it will also engage in the manufacture of engines and machinery. It has taken over all the property of the Kiou-Sin Works and now occupies the whole of the old site.

The Mohammedans of Western China

The Political and Religious Aspirations of a Virile but Little Known People

By Rodney Gilbert*

There are five stripes in the Chinese flag. Each one is supposed to represent one of the five arbitrary divisions of the citizens of the Chinese Republic. There are not a great many people who know which represents which, and there are still fewer who care. It will, therefore, astonish a great many to learn that the owners of the white stripe, second from the bottom, consider their position in the flag good ground for a grievance, make it the basis of propaganda within their own ranks, and make use of what they consider an unjust rating of their influence and importance as an incentive to greater unity and self-assertion. The people of the white stripe are the Chinese Mohammedans. Above them in the flag are the Chinese, the Mongols and the Manchus, below them the Tibetans. They claim that in numbers, political importance, and in their contributions to the Republic they are second to the Chinese only, and the truth of this claim has to be admitted, no matter how much one discounts Mohammedan estimates of their own strength in numbers and prestige. The only astonishing part of it to those who have scarcely even heard of the Chinese Moslems, is that they should be so conscious of their racial and religious differences from the bulk of the Chinese people and should make so much of their corporate dignity.



GROUP OF MOHAMMEDAN MILITARY LEADERS.

This photograph was taken eight years ago at a conference at Lanchowfu. The principal figures in the photograph are: I, the late Ma An-liang; II, Ma Fu-hsiang; III, Ma Ling; IV, Ma Chi; V, the late Ma Quo-jen; VI, Ma Ting-hsuan.

They are an inconspicuous people and the majority of them live in the most inconspicuous provinces, while those who form a minority in the strongly Chinese coast districts live inconspicuously and call little attention to their religious activities or to their effective efforts to maintain among themselves a close clan organization. That they are as proud as the Manchus, as fanatical in their adherence to their faith as the Tibetan Buddhists, as shrewd and industrious in commerce as the Chinese and as hardy and "horsey" as the Mongols, and more bellicose than any of these, does not become apparent to the student of Chinese affairs until he finds himself in some very strong Moslem community where the pig and the unbelieving Chinese are few and deport themselves with caution and circumspection.

There is no part of China in which the Mohammedans have things so much their own way as in the province of Kansu, the most north-westerly province in China Proper and the one least favoured by communication and least tainted with modernity.

Most of Kansu is mountainous, a good part of it is desert, Tibetan tribesmen graze their herds over nearly a quarter of it, Mongols infringe upon the northern boundaries, Uigurs, Salars and other peoples, who call themselves Mongols, but who speak strange dialects of their own, are established in strong little colonies in many of the high valleys; and between these many peoples and the Chinese of the cities and the well-developed country along the safe main roads are the zones and belts of the Mohammedans, carefully distinguishing themselves from all the others and living their own lives with much pride in their own creeds and ways. They are very fond of telling each other and especially outsiders that they are one in race and religion, that there is but one Islam and that there can be no differences between true believers. The traveller has to get to know them very well indeed before he can pry into their sect differences, their inter-religious politics, their feuds and their jealousies based upon differences in racial origin. These are things that the Chinese never learn, or refuse to understand or appreciate when they do learn them, and in the past this indifference has cost them dear, and ignorance has brought on devastating Moslem rebellions. There were two in the past half century and the fear of a third, stimulated by gossip and rumours from the strong Moslem centres, is the great nightmare of a large part of the Chinese population of the remote west of China to-day.

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*Mr. Rodney Gilbert, who is an authority on Western China, is more competent than any other foreign writer to speak with regard to the Mohammedans of China, their present state and probable future development. He has travelled extensively in the remote region mostly inhabited by them, and can claim the personal friendship of the Mohammedan leaders. He has just returned from a special mission among them, and this article embodies the opinions formed as a result of his investigations.—Ed.

Of Many Fighting Breeds

Many things have conduced to make all the various breeds of Mohammedans in Kansu thoroughly competent, courageous and skilful soldiers. They come of fighting stocks in the first place for they are descended from Turkish, Mongol and, to some small extent, from Arab ancestors. In all of them there is a certain amount of Chinese blood, but the Chinese of these outlying provinces are none too pure and are also of mixed and hardy ancestry—Tibetan, Mongol and Turkish—so that there is probably very little real Chinese in any of the Mohammedan groups which have repeatedly set out in the last five hundred years to exterminate their Chinese neighbors and to purge north China of pork and idolatry. The faithful will tell you that they are all descended from the 3,000 Arab mercenaries who were borrowed by a T'ang dynasty emperor, 1,200 years ago, to drive back the Tibetans, and they rather resent any attempts to demonstrate that while this little army may have fathered a fair proportion of them, the physiognomies of the majority and the languages and dialects spoken over large areas point pretty clearly to very different ancestry.

The religious centre of the province is the city of Hochow, 200 *li* southwest of Lanchowfu. Over a big territory to the east of this city are settled a Mohammedan people—a big, heavy rawboned breed—who speak a Mongol dialect diluted with primitive Turkish which is said to be spoken still on the eastern fringes of the Altai mountains in Central Mongolia where Ghenghiz Khan overturned the kingdoms of the Uigurs and the Naiman Turks. To the west of Hochow, in the neighborhood of Hsunhua-hsien, are eight clans of Salars, most pious of all the Kansu Mohammedans, who speak pure Turkish, just as it was imported by them from Samarkand five hundred years ago. On the north side of the Yellow River in villages which straggle along to the Tibetan border are colonies of dark skinned Moslems, who dress as Tibetans, speak nothing but Tibetan and indulge in such dangerous heresies as wine drinking and pork eating. Yet in Hochow, the centre of religious culture and the local Mecca for all these strange people, one meets scores of smug and sanctimonious mullahs who converse with one another in badly pronounced Arabic and who will solemnly aver that Arabia is their home and that the Moslems of China are all of one stock. We know at all events that the Mongols, when they were the masters of all Asia, imported hordes of Mohammedans of all breeds to assist in the subjugation of China and that many of their greatest commanders in China were Turks, Persians, Syrians and what not.

Are they Nestorians?

It has always been a great puzzle to missionaries and others in modern China who have read the references of Marco Polo and other early travellers to Nestorian Christian churches in almost every Chinese city which they visited, to account for the complete disappearance of the Nestorians and their converts. There is one little clue to this problem. A very large percentage of the Mohammedans west of the Chihli plain have the Chinese surname Ma. It is usually assumed that this is because the name Mohammed crops up in so many Moslem names and that, because the prophet is colloquially referred to as "Ma, the Holy Man," this is sufficient to account for the recurrence of the syllable as a family name in Chinese. In the past, however, it would appear that Ma was neither the commonest nor the most popular abbreviation of Mohammed. At the same time it will be found in various records that nearly all the Nestorians using their native prefix to their names Mar, were dubbed Ma by the Chinese. Marco Polo also hints at close relations between the Nestorians and the Moslems when he tells of intermarriage between them in the Kueihuach'eng district, which seems to prove that they had arrived at a degree of friendly tolerance in a strange land. It seems not unlikely that in times of Christian persecutions in China, the Nestorians, rather than revert to Buddhism or worse, slipped quietly into the Moslem fold and identified themselves with their fellow foreigners the Turks, the Persians, the Arabs, the converted Mohammedan Mongols and others. Whatever they were originally they are certainly not Chinese now, either in traits or features, though practically all of them are Chinese speaking. Coming from fighting ancestors, living in rough border country where a living had to be snatched between the raids of the nomads, and having been used for centuries as soldiers by both Mongols and Chinese, they have kept their numbers down and their courage high. They have a way of their own in everything. When they fight they are impetuous and ferocious, when they do business they are clamorous and demonstrative. A Moslem with a pound of mutton on a little street stand will make more noise about disposing of it to his occasional customers than a whole Chinese bazaar. They will travel hard and dangerous roads that the Chinese will not travel, endure heartbreaking hardships with the greatest degree of cheerfulness, and wherever there are animals of any sort available, you will find Mohammedans in charge of them, training them, caring for them and doctoring them with patience, skill and much solicitude. As hosts they achieve a cordiality and an air of good fellowship which are certainly not Chinese, and among themselves and such friends as they admit to the inner circle there exists good faith and honesty to a remarkable degree. In the open market, however, none can be sharper or shrewder.

Political Potentialities

Now in Kansu there are about four million of these people, and in China there are perhaps twenty million. They have a religious fellowship and a clan feeling, which if it were made a political force would seriously rival anything which the Chinese in their confused disorganization could oppose to them, and it is precisely because the modern leaders of the Kansu Mohammedans aspire to make such a political force of their big organization that they are particularly interesting and will continue to be more and more interesting as time goes on.

To all of this the Chinese are blind. The ado which the Moslems make about their religious affairs is looked upon with contempt or suspicion by Chinese officials who do not make the slightest effort to understand and who have no policy even in communities where the Moslems enjoy an overwhelming majority except one of repression. In former generations the Chinese used to watch for opportunities to meddle in Mohammedan affairs. When a fracas between sects occurred they asserted themselves and officiously attempted to put down the trouble without attempting to understand the causes, with the almost invariable result that both or all the Moslem factions turned upon them and rose in rebellion, sweeping over whole provinces and in some instances massacring nearly the whole Chinese population of north-west China. From these serious troubles the Chinese have learned some wisdom. The settlement of Mohammedan disputes has been almost entirely in the hands of their own leaders for more than a generation; but no intelligent thought has been given at any time to the possibility of using these vigorous people in China's interest or of coming to an understanding with them which might insure the permanent peace and prosperity of the western provinces. The initiative in these matters has come from the Mohammedans themselves and as they are taking an intelligent interest in Chinese affairs now and are strengthening themselves in the military ascendency which their leaders have built up for them, it seems likely that they will hold the initiative and that in another generation they will be in a position to dictate to the Chinese the terms upon which the two peoples—for the distinctions between them are growing rather than decreasing—are to live together and co-operate in the development of the country which they jointly inhabit.

Ignorance and prejudice leading to bad feeling and open breaches have not all been on the side of the Chinese however. In the blind struggle, lasting through centuries, to preserve their religion and their distinctions in their mode of life, the pious religious leaders of the Mohammedans have instilled into their people a hatred of all things Chinese which extends even to Chinese art and literature and which has cut their following off from sympathetic relations with the best elements in Chinese society and has forced them to rely solely upon their qualifications as soldiers, small traders and artisans in their competition with their Chinese neighbors. The literary qualifications for a civil official in China have always been high and the examinations were severe under the Manchus, so that until very recently there were no Mohammedan civil officials and their merchants, equipped with nothing but a superficial knowledge of Koranic Arabic found it very difficult to enter upon commerce on a big scale. The study of Chinese and Chinese institutions was pronounced unclean, and the little communities of ignorant and bitter Moslems clustering around their mosques and ruled by their conspiring mullahs were perforce kept in the ranks of hewers of wood and drawers of water and had no outlets for their energy and ambition but rebellion and planning afresh for more rebellion after each unsuccessful and costly attempt.

The New Tactics

Now a great change has come over them all. Something of the modern spirit has touched them; their leaders, rising to positions of high military influence in an era when the military enjoy more prestige in China than the civil officials, have gained a perspective upon the state of China and have seen opportunities for their people which were not dreamed of before; and while their fathers aspired to dominate northwest China through the extermination of the despised Chinese, the new generation looks forward to control through an intelligent participation in Chinese affairs. It is no longer holy to be ignorant of the Chinese literature and of Chinese laws and traditions—it is a misfortune; and it is a misfortune which is being corrected as rapidly as possible by the establishment of new schools in all the Moslem communities, by the importation of educated Mohammedans from the coast communities as teachers, and by the use of trainers from the Peiyang army as military instructors.

The Story of Ma An-liang

The one Mohammedan name which is fairly familiar to all who keep in touch with Chinese affairs is that of Ma An-liang, an aged military leader who died in Hochow on November 24th of last year and who for a generation had been the recognized leader of all the Mohammedans of west China, something of a tyrant in his way, a very conservative pan-Islamist, but a very useful and loyal supporter of the Chinese Government. Ma An-liang was the son of one of the most powerful of the Kansu rebels of 60 years ago and was a recognized leader of his own people under the renowned Tung Fu-hsiang. He earned the attention and approbation of Peking a few years before the Boxer rising by assisting Tung Fu-hsiang in the suppression of a rising among the Hsining and Hochow Mohammedans, and became personally known to the Imperial family after the Boxer trouble when he came to Hsianfu to their support with twelve companies of his own following. From that time forth he was recognized leader of all the Kansu Moslems and nearly all the prominent leaders who now control the province between them are either his relatives or officers from his military organization which has always had its headquarters in his home in Hochow. For many years his authority over all divisions and sects was absolute. It was he who settled all religious and other disputes, put down "heresy," nipped incipient revolutions in the bud, promoted religious unity and subsidized all the wandering mullahs and Koranic readers who drifted into the country from Turkestan, Persia, Turkey and Arabia, importing the fanaticism of Western Asia and inculcating Pan-Islamic doctrines. At the time of the Revolution he espoused the cause of the Manchus and the Hochow soldiery were sent down into Shensi to fight the revolutionaries. They were almost within sight of Hsianfu when news of the abdication came and they had to be withdrawn to Kansu. Then for a year or so Ma An-liang lived in Lanchowfu and was virtually governor of the province. In 1913 the present Tuchun, General Chang Kuang-chien, was appointed, however, and he arrived in Kansu with a following of his own from Peking—a small body of trained troops who had a huge contempt for the rustic soldiery of the old Mohammedan leader and who showed a strong tendency to play with fire by provoking the Hochow men to combat in the streets on every possible occasion. General Ma and his lieutenants soon realized that if he continued in Lanchow he would have to fight and as he was old, rich in property and had the interests of several sons to consider, he showed discretion, withdrew to Hochow, and took his following with him. Relations between Hochow and the Capital were strained from that time forth and the local Chinese, who knew much better than the new governor the seriousness of a Moslem rising, lived in constant terror of an open breach up to the time of Ma An-liang's death last year, and were then in particular fear lest the lesser leaders, his son, his relatives and his ex-lieutenants should start feuds among themselves.

Divisions in the Fold

During the last five years the Chinese authorities have been working in their own way to break down the absolute authority of the old chief by promoting his subordinates, putting power in their hands and cultivating rivalries and jealousies among them. Every effort was made to divide the Hochow forces, whose blind loyalty to the old leader and whose ignorant fanaticism made them the most dangerous element in the province. Ma Fu-hsiang, a relative by marriage, who was at one time high in the favor of the Empress Dowager, was promoted from the office of Hsining Chen-t'ai to that of Ninghsia Hu Chun-shih, and to the city of Ninghsia he attracted a goodly body of local Hochow men, officers and friends of the old leader, and even a number of the Salars, the Turkish speaking clansmen, who were Ma An-liang's strongest support. Ma Ch'i, a competent but rough soldier, formerly under Ma Fu-hsiang, was made Cheng Shou Shih at Hsining and then Chang Kuan of the Koko Nor, an office which was formerly almost equivalent to that of viceroy. This commander proceeded to enlist for himself a strong force of Mohammedans from the western Hochow districts, men seasoned in fighting the Tibetans.

Taochow, in the south-west of the province, set up a new sect with a reincarnation of the "Prophet Jesus" as leader, and the Chinese governor gave them protection after Ma An-liang in his capacity as arbiter in religious disputes had attempted to wipe them out. In the south-east of the province, in Chang Chia Chuan, old Ma Yuan-chang, a Yunnanese Moslem, was established as a holy man in a great sanctuary on the side of a mountain, and the pilgrims who came to him from all parts of the country were fast shaping themselves into a sect which claimed that he was a new prophet, fully as holy as the one who is buried in Medina. Twenty years ago these things would not have been tolerated but would have led to great slaughter and the discomfiture of the Chinese. But the unity of the Mohammedans was breaking down and Ma An-liang was aging.

In Hochow, were there is less Chinese learning and more mispronounced Arabic in use than elsewhere, the happy thought of a great rising and a huge massacre of the unbelieving Chinese was still cherished and eagerly discussed, but other ideas were permeating other communities. Two years ago Ma Ting-hsuan, Ma An-liang's third son, returned from Peking with an exaggerated idea of his importance, considered himself slighted upon his arrival in Lanchow by Governor Chang Kuang-chien, and hurried off to Hochow to raise the standard of rebellion among his father's fanatical followers. The old leader was promptly warned of his son's activity, however, and he suppressed the movement with a firm hand. When the Chinese authorities learned of the affair they tried to smooth matters over by appointing the recalcitrant son to the office of Liangchow Chen-t'ai. This also had the desired effect of taking a few hundred more Hochow troopers out of Hochow and shifting them to a remote city where they were completely out of touch with their fellows. Last summer the old chief of all the "hui-hui," was appointed Kanchow Hu Chun Shih, which would have moved him also far from his base and would have put him down in a remote community with a big title and a very small following. Naturally he did not go. He was urged repeatedly and as often declined, and finally he set out for the Capital to talk it all over with the Governor. On the road he was taken ill, upon which he returned to Hochow and died.

At this juncture all the Chinese of the province held their breath. The old man's firebrand son from Liangchow returned home and took command of the Hochow following—not many men under arms, but a whole population accustomed to arms in reserve. Immediate trouble was anticipated, but it did not come. Ma Ting-hsuan hoped to be appointed to his father's office at Kanchow, the position which the old man had declined to take up, so he sat quietly in the family mansion waiting developments. They came but they were not to his liking. A man from the east of Hochow, a former officer in his father's army, Ma Ling, was appointed Cheng Shou Shih at Kanchow and to him were assigned six of the companies formerly under Ma An-liang's command, six companies of his private following. Some refused to go, so others were recruited in the eastern Hochow district to take their place. The east and the west districts were divided and there was no head over them all. Up to this point the Chinese policy of splitting up the Moslem power appeared to have succeeded fairly well. No one of the lesser leaders was on particularly cordial terms with any other, and while it was true that no one of them was a very ardent supporter of the old Chinese governor and any one of them might have recruited a following big enough to overturn the Lanchow government and throw the province into turmoil, the danger of an united effort at rebellion, which has always haunted the Chinese mind, seemed to have been removed.

Keeping the Peace

As a matter of fact there is not a leader of any real power in Kansu now who seriously considers rebellion or who has any desire, apart from strengthening his own position locally and extending his influence among his own people, to do anything but keep the peace. And for having kept the peace while all the rest of China was in turmoil, for having excluded from the borders of Kansu the unruly elements which have tormented the neighboring provinces of Szechuan and Shensi, and for having eliminated the bandit nuisance so that there is not a safer and quieter province in all China, these Moslem commanders deserve no little credit.

Trouble there may be among the Mohammedans of the western provinces, but it will not be the kind of trouble which the Chinese expect or which their authorities have been trying to ward off by splitting up the Moslem military power and preventing any one man from inheriting the power that was Ma An-liang's. Events may prove indeed that this is a sadly mistaken policy. There is a growing "Young Mohammedan" school in Kansu which promotes education, would like to see Mohammedans in civil offices, would like to unite the Mohammedans of all China into a political party and put the white stripe higher in the flag, but which realizes that the "hui-hui" proletariat will need a great deal of educating before this is possible and that a good many old prejudices and predilictions—especially the tendency towards plotting, rebellion and slaughter—must be done away with before this is possible. The most prominent leader in this progressive group is General Ma Fu-hsiang, the Hu Chun Shih at Ninghsia and a Chinese scholar of no mean ability. The most powerful of the reactionaries was Ma An-liang, the once all-powerful chief who died last autumn. Yet even the great "T'i-shuai," as he was called, was anything but a promoter of political rebellion. He was ambitious for Islam and he had few modern ideas, but he was an honest servant of the Chinese Government and remarkably fair-minded for a religious fanatic in his attitude towards his Chinese and Tibetan neighbors. If he had cared to rebel he could have done it any time during these latter years of Chinese disruption and could have done it with an effectiveness that would have made child's play of any of the upheavals south of the Yangtze River. Now it is next to impossible. The modernized Mohammedans of whom Ma Fu-hsiang is the best type would not tolerate it, and without Ma Fu-hsiang's assistance now any movement in Kansu against the Chinese authorities would be more than futile.

Where the Real Danger Lies

The danger, if there is any, lies elsewhere. In these latter years the growth of new and strange sects has been phenomenal. Their growth has coincided with the decline of Ma An-liang's power and no sooner was the old man dead than several new ones came into prominence in the erstwhile centres of orthodoxy which set the communities buzzing with suppressed excitement and animosity. Two strong sects have long existed and made war on each other in Kansu—the old religion and the new religion, the cavaliers and the roundheads respectively. In addition to these we have the strange sect at Taochow, headed by the "Prophet Jesus," the still stranger following of an opium-smoking teacher, who was done away with a few years ago by Ma An-liang's men in the vicinity of Titao, and the large and ardent pilgrim entourage of Ma Yuan-chang, widely known as Ma "Shan-jen," the Benevolent, who openly aver that they think pilgrimages to Chang Chia Chuen just as holy and twice as convenient as pilgrimages to Mecca, and thereby cause the hair of the faithful to bristle with horror. Last of all there is a new new religion, which is gaining an insidious hold in Lanchow, Hochow and Hsining and is being ardently preached by a brother of Ma Ch'i, the powerful border commissioner, which is causing as much discontent and bitter controversy in religious circles as all the others put together. It is often difficult to understand why some of these heresies are so heinous, for they seem so trivial. The greatest of all Moslem rebellions in China started in the Salar country over a question of how a good follower of the prophet should trim his whiskers. Bearing this in mind it may be appreciated that the new new religion creates a stir when its missionaries teach that one may read the Koran without removing his shoes, that if one learns any part of the Koran it is as good as the whole, and that one may smoke and drink wine. These seem like laxities, but in communities where the new faith has taken such strong hold that the minority have to conform it is complained that one is expected to pray all the time without intermission for business or pleasure, and that it is the most irksomely strict of all doctrines.

These are matters in which there is seed for trouble but with which no Chinese official is competent to deal. Only a Mohammedan, and a Mohammedan of modern training and a good deal of tact, could hope to govern a country so full of dissentious fanatics without resorting to persecution and bringing a storm about his ears. As matters now stand there is no single man in all the north-west who stands sufficiently above his fellows to command the respect and obedience of all, and yet any one of them, by adopting and forwarding the interests of some one sect could cause enough trouble and confusion to disturb the peace and order of several provinces.

Take for instance the case of Ma Ch'i the commissioner in Hsining whom Governor Chang has endowed with such powers that he is no longer a subject but an independent potentate, exploiting the Tibetan frontiers to his own profit, introducing Hochow mullahs of the new religion into the strongholds of the old religion in the Hsining district and otherwise sowing the seeds of trouble. His younger brother is one of the chief apostles of the new new religion and it is suspected that Ma Ch'i himself is a convert. Suppose he were to appear as the military champion of the ultra-new faith and were to try to impose it upon the Hsining communities and upon the Hochow west countryside. There would be a small religious typhoon in that quarter and a good many Chinese would be slaughtered as a side issue. What would the Chinese provincial authorities do? They would send along troops who would be promptly defeated and out of the high rugged mountains on the Tibetan border Ma Ch'i's cavalrymen would descend upon the Lanchow plain and massacre more Chinese. Then the whole province, if not its neighbors as well, would be embroiled and in a few months the population would be reduced by several millions and there would be no pork in the land. This is speculation but it is speculation based upon gruesome precedent.

The One Possible Leader

While Ma An-liang lived such things were impossible. He would have known what was going on as soon as Ma Ch'i; he would have prevented Ma Ch'i's Hochow soldiery from taking part and if his preaching brother had showed a tendency to mix politics with religion he would have cut his head off without warrant or permission in front of the Ma mansion in the south suburb of the city of Hochow. Some such guardian of the peace in the Mohammedan fold, some one who has too much worldly sense to be involved in questions of doctrinal niceties, who is sufficiently modern to dispense with unwarranted executions, but who has enough influence among the Hochow marauders to sway at least a portion of them, is now badly needed. The Chinese who have been so assiduously at work splitting up the Mohammedan power and playing one minor leader against another until they are all so strong that any one of them could drive Governor Chang Kuang-chien and his little following of dispirited soldiers out of the province, would greet with horror the suggestion of a Mohammedan governor. It would look like delivering them into the hands of the enemy. If the right man were chosen it might be the best thing for the future development of the province, but it seems fairly impossible, so other suggestions are in line; and the one that comes most readily to mind is that a Mohammedan commander in chief of all the Moslem forces in Kansu be appointed with a rank equivalent to that of a Deputy Military Governor, a kind of super-policeman to police his own people. For such an office General Ma Fu-hsiang, now the commander at Ninghsia, is the only logical candidate. He is a Hochow man, he is the highest ranking military officer in the province next to the present governor, he is a capable soldier, a good Chinese scholar, a leader of the new school that is more interested in promoting Moslem prestige than in slaying Chinese and pigs, and he is above all a man who can be safely exonerated from any connection with strange sects or any desire to play the military apostle.

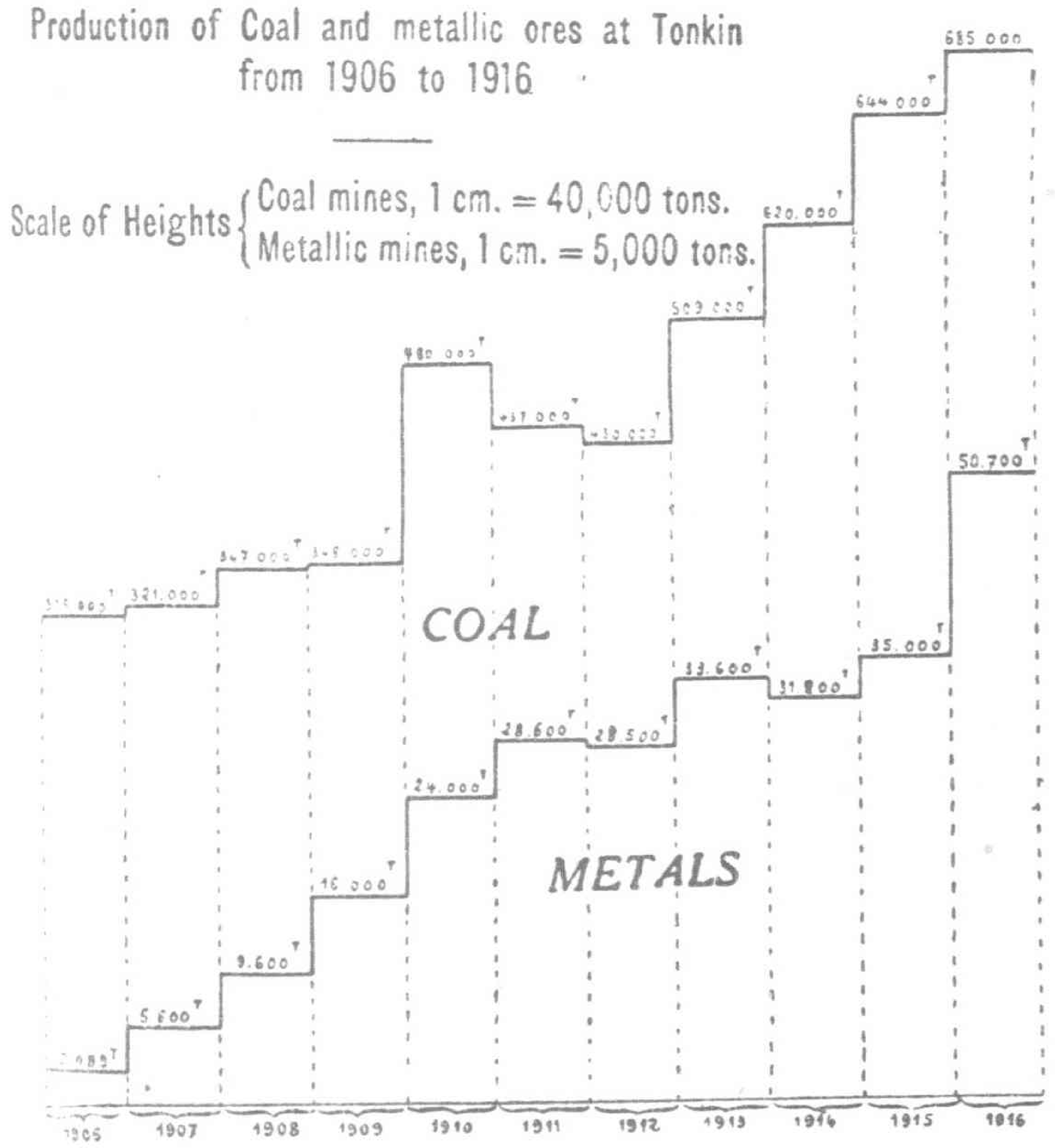
There is no danger that the Chinese government will ever appoint him to such an office as that which we have suggested, for it does not do things that way. Mohammedan influence in Kansu is already too strong to please the militarists in Peking. Because of their power and because these simple-minded soldiers in their mountain fastnesses have never been able to see the sense in the sort of interprovincial warfare that has been racking and impoverishing China, it has never been possible to involve Kansu in the mad civil war. Kansu has been no asset to the military dictators in Peking; Kansu has never been the scene of the kind of slaughter and rape that have been going on in Hunan, Szechuan, Fukien and Shensi to the glory of the Japanese financed war lords in the national capital, nor has it contributed any of its peculiarly efficient soldiers to such merry-making in other provinces. The Mohammedan leaders, lacking in the new political sense, have been too dull to see why they should mingle in such things and have dully considered it their duty to maintain perfect peace within their provincial boundaries and to guard the borders with such efficiency that neither revolution nor banditry have trespassed upon their soil. This being the case it is scarcely likely that such a state of things would be confirmed by uniting them under a military leader like Ma Fu-hsiang who has shown himself particularly efficient in putting down lawlessness on his Mongol frontier.

It seems much more likely that the Chinese will prefer to drift along as they always have done, blind to new religious and social developments among their spirited neighbors, suffering from volcanic explosions among them which they do not understand, until the new self-improvement movement among the Moslems has achieved its purpose, until they find intelligent Moslems, knowing as much if not more of Chinese affairs than they do, ready to step into offices and govern them and until an intelligent, articulate organization among the young generation of Mohammedans comes to them and says "go"—whereupon they will go and the white stripe will rise higher in the flag.

The Mining Industry of Indo-China

The Coal Mines of Tonkin

The exploitation of the mines of Tonkin has developed in a most surprising manner during the last dozen years (of which the graph given, with this article, gives a satisfactory account). Annam and Laos, while rich in minerals, have, contrarily enough, made little progress in the same period; which may, on the one hand, be attributed to the fact that this country is still lightly blessed from the point of view of communications, and on the other hand to the fact that the Frenchmen living in the country are not numerous and do not unite in themselves the faith and physical energy of the prospector with the technical and financial capacities necessary to undertake the exploration of this difficult country. Nevertheless the situation is about to be ameliorated, roads going from Annam to Laos are under construction (roads from Vinh to Hin-Bun, and from Quang Tri to Savannakhet) and some hardy and tenacious prospectors have for some time been undertaking a survey of the country.



Graph showing results of mine working

The limits of this article do not permit us to write of the various beds of different minerals actually known in Indo-China, but we can limit ourselves to giving a glance at the situation and the actual conditions of the mining industry in the Colony and principally at Tokin. We will write subsequently of the principal deposits of coal, zinc, tin and gold which are actually being fully exploited.

Mining Regulations

The prospecting for and exploitation of mines are regulated in Indo-China by the decree of January 26, 1912, modified as regards some details by the decrees of December 24, 1913, and November 12, 1916.

By the terms of these regulations the acquisition of mining property is based on the principle of "The mine to the discoverer," this latter being he who first makes to the functionary indicated by the text (the chief of a province or a commissioner of mines) a declaration in writing indicating, with the assistance of a map, the position of the centre of the perimeter within which he intend to make his researches. This declaration, which should be preceded by the payment of a fixed fee of Fr. 100, creates, in favor of him who has made it, an exclusive right of search for a period of three years, in the land contained in a square having as its centre the spot indicated on the map, and of which the sides are three kilometres, and oriented following the directions true N-S and E-W.

If the prospector wishes to change his right of search to one of definite property, he has to make it known, before the expiry of his original permit, by a demand for a concession which he has to send to the official who received his original declaration, together with a plan showing the boundaries of the concession desired. After the Administration has verified this map, the application is submitted to an inquiry in the course of which any opposition to the establishment of a concession is taken before a judicial tribunal, the decisions of which are binding on the Administration. If there is no opposition the Administration acts on the application after examining the validity of the applicant's title. All that is necessary for the concessionaire to preserve his title is to pay annually a tax of two francs per hectare during the first five years; this is doubled at the commencement of the sixth year and is increased to six francs at the commencement of the tenth year.

Prospecting for Mineral Deposits

Prospecting in Indo-China is particularly difficult by reason, partly, of the rigors of the climate and partly because the mines are to be found in mountainous regions, difficult of access, covered with a thick brush which can only be traversed with the assistance of a chopper, inhabited sometimes, as in the Annamite chain, by primitive races, absolutely forbidding to Europeans and even Annamites access to this territory, and nearly always by populations who do not witness without apprehension the coming of the European to disturb their quiet.

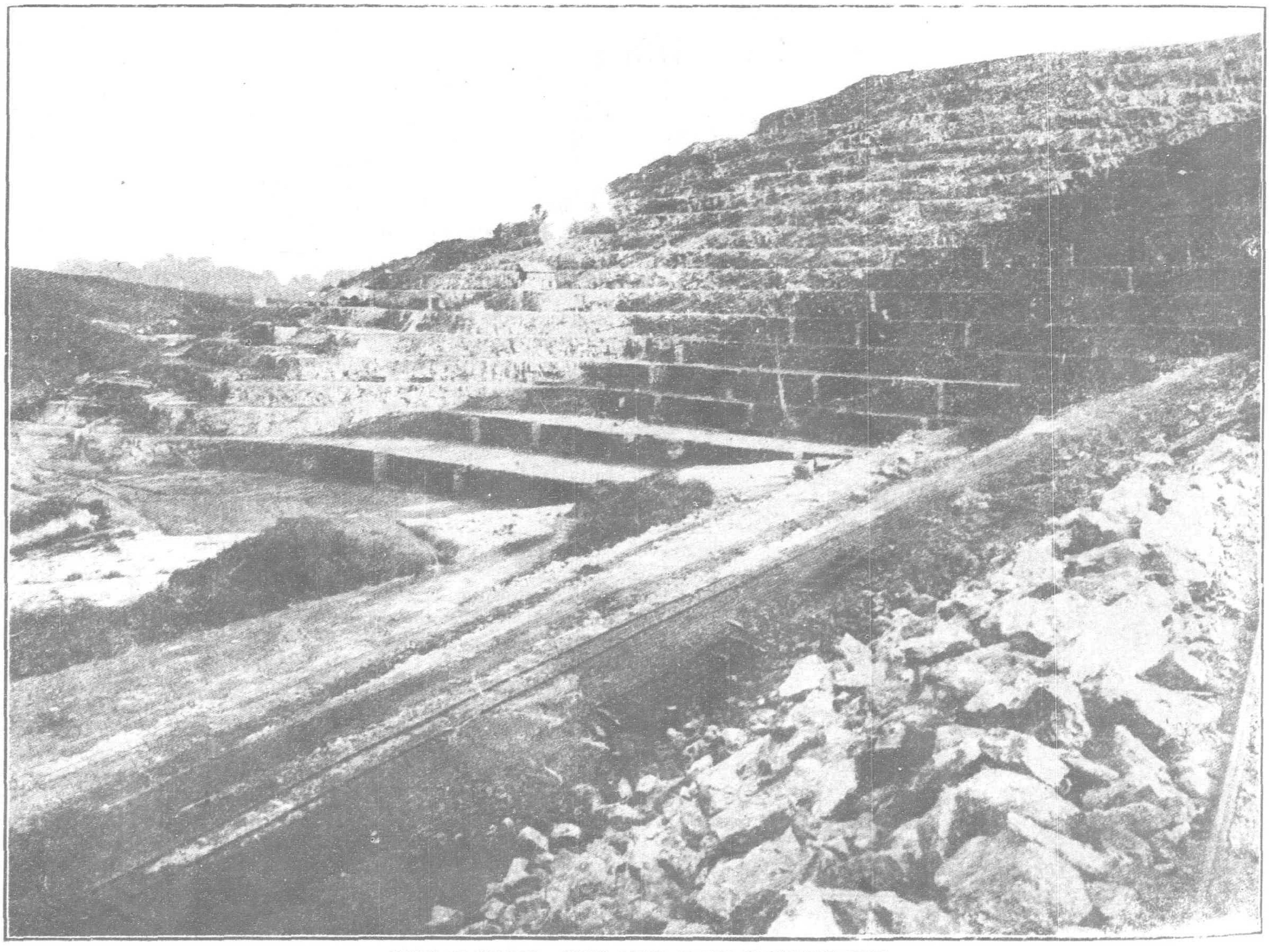
For these reasons preliminary prospecting is always carried out by natives who, if they do not themselves discover new deposits, are able, with patience and the distribution of a little money, to obtain information on ancient workings, numerous notably in Tonkin, rediscover their locations and guide Europeans to them.

Generally, the French, who, by their knowledge of the country and its language, and by their relations with native circles, obtain information about the mines, possess neither the knowledge nor the necessary capital to work them. They are then wise enough to confine themselves to marking out the exact locality of the mine and to doing some work there, turning the soil, or getting rid of the brushwood or facilitating access by tracing out paths which will permit of further examination of the ground. That done, the best thing for them then to do is to lay the matter before a technical man, supported by capital, who will be all the more ready to deal with the matter by reason of not having to meet the expense of the preliminary investigation of the mineral deposits. Such a technician will take care not to disregard summarily the information thus given him, and he will not hesitate to spend further money which will be amply repaid to him on the day when, after many fruitless attempts, his work lays open an interesting bed.

Native Manual Labor

The only laborers employed in the mines of Indo-China are Annamites or Chinese and the general opinion is that recourse cannot be had to any other class of labor because the highland population of Tonkin (Tho, Man and Meo), any more than those of Annam (Mu'o'ng and Moi) or the inhabitants of Laos and Cambodia, are not likely, being given to habits of independence and idleness, to supply a service even more or less regular.

The Annamite is intelligent and submissive, but he is not very vigorous. A native of the plains, he does not readily become



MINES OF HONGAY. SEAMS BARED AT THE MONTPLANET MINE accustomed to the vigorous climate of the mountainous and wooded regions in which the mines are usually to be found.

The Chinese is more robust and stronger than the Annamite, also more courageous, and the climate in high regions troubles him less. But he is also more independent and more difficult to handle. He submits with bad grace to the discipline necessary in organized exploitation and his output is only really good when he is left free to work according to his humor.

At the commencement of working a mine, in a particularly difficult period when the forest is not yet rendered healthy for heavy work with the soil, the construction of roads and levelling, the Chinese are often used. But later when the district has been rendered more healthy, the lodging of the coolies more comfortable, when the mining works proper are being organized and when it becomes necessary to extract the mineral ores carefully without mixing with unproductive material, the Annamite is preferred to the Chinese.

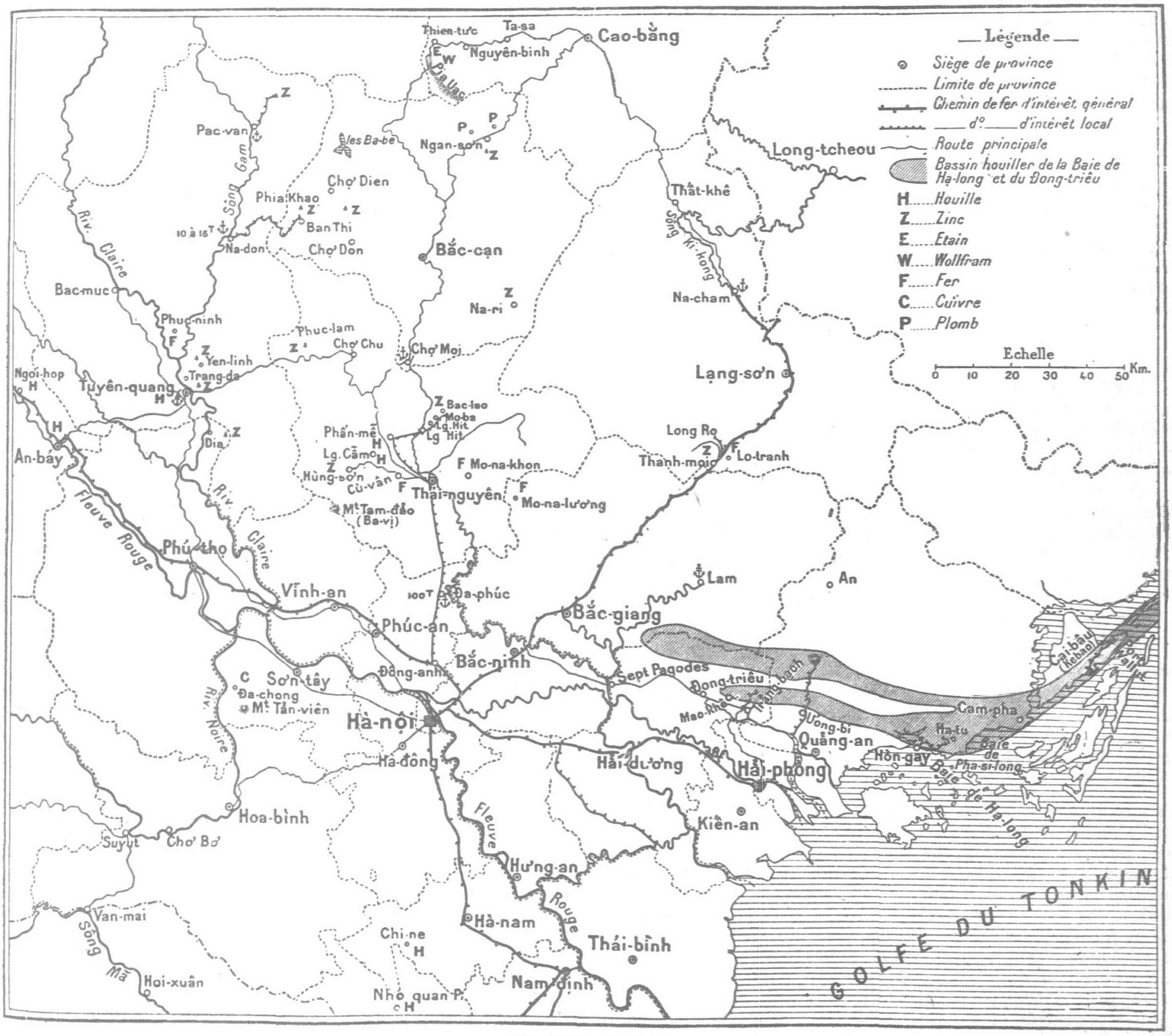
The output of Asiatic laborers, of Annamites as well as Chinese, is poor (about one-third of that of French workmen) but their pay is even less in proportion (from 65 centimes to Fr. 1.50 a day) with the result that in the long run the cost of Asiatic labor is cheap.

According to information in our possession it is most often about half and rarely as much as two-thirds of the cost of manual labor in France. It should be taken into account, however, that there already exists a few real native miners in Indo-China, and it is certain that in a few years the output of the workers in mines will be appreciably increased.

Craftsmen, such as fitters, mechanics and carpenters, have been recruited until late years from among the Chinese, but more and more Annamites are being substituted for them, and these after a good apprenticeship are not inferior to them. The Annamites have, moreover, an appreciation of the mechanical arts and well supervised by European foremen give excellent results.

The European Personnel

In the mining undertakings of the Colony the European personnel plays the part of technical and administrative control and the supervision of the work. It should, then, be recruited with much care. Very often the subordinate positions are filled on the spot from soldiers freed from service, who make excellent servants, conscientious and active, but who generally know nothing about mining. But while it may be interesting enough to teach a peasant of the Tonkinese delta, who has never before left his rice fields, to sink a mine shaft or timber a gallery, never-



THE MINES OF TONKIN

theless the supervisors should themselves be miners, and these should be recruited in France, despite the expense of bringing them out and the necessity of giving them long agreements.

For stronger reasons the personnel of the management of the mine should be sought in France. The manager, in fact, should unite in himself the widest possible technical knowledge (because he will be left to himself) and the complete qualities of a man of affairs. It is imperative that he should enjoy the complete confidence of his board of directors and that the latter should leave the entire initiative in his hands. The cost of this European staff will be about three times the cost at home.

Transportation by Land and Sea

Transportation inland is carried out by bearers, pack horses, sampans, junks and railway. The cost of transportation may be approximately ascertained from the following table:—

By bearers per kilometric ton	$ .60 to .80
By pack horse per kilometric ton	.50 to .70
By carts per kilometric ton	.20 to .30
By sampans (from 3 to 5 tons)	.07
By sampans (from 3 to 15 tons)...	.04
By sloops, junks, etc., of 50 tons and over... ...	.006 to .008
By railway—this varies, with a minimum of ...	.02

Freight to European ports (Dunkirk, Antwerp, Marseilles), varied before the War from Fr. 22 to Fr. 35 per ton for zinc ore to Fr. 70 for ores of tungsten and tin. To these costs should be added the expenses of handling, weighing, dock fees, the tax of 2 per cent. *ad. valorem*, documents, insurance, etc.

The Mines of Tonkin

Tonkin is the only one of the five countries of the Union of Indo-China in which the mines have reached the working stage. The coal mines, worked since 1888, have doubled their output during the last 10 years, while as for the metal mines their production, which was practically nil in 1905, reached in 1916 totals of 49,000 tons of zinc ore and 932 tons of tin and tungsten ores.

Coal

Tokin possesses numerous and extensive strata of anthracite hard coal, and less well known resources of rich coal. These strata belong to the same geologic formation, Rhaetic, discovered by the learned work of M. Zeiller, Inspector General of Mines and member of the Institute.

The coal formation stretches for 180 kilometres from Mon-cay, in the East, to Seven Pagodas in the West, with an average width of five kilometres. Between these two extreme points it forms the arc of a circle with its convexity towards the South.

Composition of the Coal

The coal of Ha-long has the average composition indicated below:

Volatile substances	8 to 11 per cent.
Ash	2.5 to 7 ,,
Fixed carbon	85 to 88 ,,
Sulphur, less than	1 ,,
Calorific units	7,800 to 8,400

This coal approaches closely the quality of the best hard coal of Wales as will be seen from the above table. It is an excellent fuel, burning without smoke and giving no clinker. Its method of use differs somewhat from coal richer in volatile substances, but stoking being less laborious, by reason of the absence of clinker, the stokers soon learn the best way of handling it. The use of forced draught is recommended in dealing with small coal of all kinds. Tonkin coal burns equally well mixed half and half with richer coals. More than 100,000 tons are sent annually to Japan and China for this purpose. Small coal, which constitutes two-thirds of the total production of Tonkin, is sold in China (Hongkong and Shanghai) to be mixed with richer Japanese coal for domestic purposes (it is sometimes mixed with a little slag) and also for burning lime and other industrial purposes.

The coal mines of Tonkin have a great future before them. The known reserves are in fact very considerable and are geographically situated in exceptionally favorable spots, either on the coast, by sheltered roadsteads accessible to vessels of 4,000 to 6,000 tons (as Hongay, Kebao and the mines of Port Courbet) or (as the mines in the region of Dong-trien) at small distances from waterways navigable by lighters of 100 tons which in a few hours can be towed to Haiphong.

The customary prices at Haiphong, before the War, for the best coal the country produces were as follow:

Lump coal	Fr. 17
Nuts	Fr. 17
Small	Fr. 10

and certain mines producing coal of lesser quality are able to deliver it at Haiphong at Fr. 12 per ton for screened and Fr. 3 for small coal.

Markets are now widely open for the coal: in Indo-China, first of all, whose well planned industrial development will not long delay in realizing its full scope, and in the neighboring countries, China, Japan, Hongkong, Singapore and even Vladivostok, and, perhaps later, on the west coast of North America where anthracite is in demand.

Description of the Principal Workings for Hard Coal in Tonkin

The Region Around Ha-long and Pha-si-long Bays

HISTORY.—The first workers of coal deposits at Ha-long Bay were the Chinese, who, about the year 1865, worked several localities destined to furnish the warships of the Chinese government with the necessary fuel. It was not long before these deposits attracted the attention of the first explorers of Tonkin, and from 1881 a mission was entrusted to M. Fuchs, then Engineer-in-chief of Mines, and to M. Saladin, Civil Engineer of Mines, to study the coal region about Ha-long and Pha-si-long Bays. The account of the work of this mission appeared in the "Annales des Mines" in 1882, and the conclusions then arrived at were very favorable. Following Fuchs' travels, and in conformity with his proposals, the Government decided to send a new mission which was entrusted to the leadership of Sarran, Colonial Engineer of Mines, and which extended from 1885 to 1886. In 1888 Sarran published, from the house of Challamel, under the title of "Etude sur le Bassin Louiller du Tonkin," a work which is still to this day the most complete study which has been published on the hard coal mines of Tonkin. Then since 1884, M. Bavier Chauffour, representing a group of French capitalists whose attention had been drawn to the deposits of Ha-long Bay by Fuchs' mission had obtained from the Annamite Government, for a payment of $100,000, the concession of these deposits. The French government contested the validity of this contract, but after a long discussion accepted a settlement of the dispute and in 1887 conceded to M. Bavier Chauffour the mines of Hongay. Such is the origin of the proprietary title of the "Société Francaise des Charbonnages du Tonkin" which was substituted for M. Bavier Chauffour.

The Hongay Mines

The commencement of the Societe des Charbonnages du Tonkin was attended with difficulty. From 1888 to 1900 it just managed to exist, struggling courageously against obstacles of all kinds which presented themselves. At last in 1900, thanks to its tenacity and energy, and thanks also to the considerable sacrifices which it had to make, these difficulties were overcome and from that time complete success crowned its efforts. The Societe produced 600,000 tons of coal in 1916 and its shares issued at 500 fr. are to-day worth more than 2,500 fr.

THE COAL BED.—The coal seams actually known within the limits of the Hongay concession have been classed in two systems:

The system of Hatu and that of Nagotna.

To the first system belongs the following seams:—

(1) The upper seam of .50 metres to .80 metres thick considered unworkable to-day.

(2) The main seam of which the thickness varies from 50 to 60 metres with a workable thickness of 30 metres of good coal. This seam is worked at Hatu and Cam-pha.

(3) The flooded seam 50 or 60 metres below the preceding seam, with a thickness of 2.50 metres and which is not actually being worked.

(4) The seam 180 metres below the main seam found only in hill 158. Its useful thickness is 13 metres. It is being worked subterraneously at Hatu at the foot of hill 158.

The Nagotna system comprises a dozen known seams having a workable thickness of from one to eight metres. Four of these, at Nagotna, are worked underground by shafts and galleries which was, however, stopped in 1910. It would appear that the layers worked at Nga-hai recently, and at Mong Duong since 1908, belong to this system.

OPEN WORKING.—The greater part of the tonnage extracted comes from the main seam worked in the open air at Hatu, which in 1916 supplied 280,000 tons of coal from the three open workings of N.S., Monplanet and hill 158, and at Cam-pha where 170,000 tons were obtained in the same year.

In all these open workings the coal is cut into stair-wise, each step being from 5 to 6 metres high, of which inclination is maintained at an angle of 45 degrees in order to prevent landslides. Trolley lines placed on each level enable useless material to be discharged on the one hand, and on the other transport to the inclined planes the coal, which meets at chutes which end in hoppers under which go the waggons for loading.

The centre for Hatu is Hongay where the screening is done. The coal from Cam-pha is taken to Hongay in lighters which carry the filled waggons (without wheels) to avoid too much handling, which breaks the coal. On arrival at Hongay the waggons are lifted out by cranes, deposited on trucks and sent to the screening depôt.

Subterranean workings into the hillsides are carried on at Hatu in the 16 metre seam at Mong-Duong in the seams in which there are 8 metres of workable coal, and at Nga-Hai in the two seams in which there is an average thickness of 2 metres available. At Hatu and Mong-Duong the horizontal gallery is used: at Nga-Hai inclined galleries. Altogether these subterranean mines produce 120,000 tons of coal annually. This coal, so far as the mines of Mong-Duong and Nga-Hai are concerned, is transported to Hongay by towed lighters; that from the 16 metres seam at Hatu is sent to Hongay by the railway mentioned above.

SCREENING AND SORTING THE COAL.—After the first sorting, done at the mine solely for the purpose of eliminating the larger pieces of useless mineral, the coal from the different mines is emptied into metal hoppers on arriving at Hongay. From the hoppers it passes on to moving sieves of the Humboldt and Dalbouze types which class the coal into four categories:—

Large lumps above 50 millimetres.
Lumps between 30 and 50 millimetres.
Nuts between 12 and 30 millimetres.
Small coal between 0 and 12 millimetres.

On leaving the screens the large coal passes on an endless band along which are stationed coolies who take out by hand the pieces of schist. The coal belonging to the other categories is emptied into waggons and put direct into stock. The nuts are generally washed, in a Guilhaumat washer, and is thus made into a fuel of exceptional purity.

In order to meet the demands of steamship and railway companies the Societe des Charbonnages has established an important works at Hongay for the manufacture of agglomerates composed of about 30 per cent. of rich Japanese coal and 70 per cent. of hard small coal from Tonkin. The binding material is coal tar which came from Europe or America before the war and of which a certain quantity is now supplied by Japan.

Three French presses (Bietrix system) and two English presses (Middleton's) ensure a production annually of 130,000 to 140,000 tons. Hongay briquettes are highly appreciated because of their small cinder content, their raised calorific value and their great cohesion, which allows them to be freely handled without breaking, and for the facility with which they can be stowed away in the bunkers.

The following table gives the results of the analysis of the two qualities of briquettes manufactured at Hongay:—

	Ordinary Briquettes per cent.	War Briquettes per cent.
Volatile constituents (not including water)	17.5 to 18	18 to 18.25
Fixed Carbon	76 to 77	78 to 81
Sulphur	.90 to 95	.70 to .75
Calories	7,500 to 7,600	7,850 to 8,100

A battery of nine Coppet furnaces produce 25 to 30 tons of coke per diem, thus meeting the needs of the Société and the various construction shops in Indo-China. The coal treated for coke is a mixture in suitable proportions of rich Japanese and hard Hongay coal. The workshops of the Societe des Charbonnages are used in maintaining the materials used and even for the construction of the necessary machinery, notably of boilers, etc. The workshops include forges, fitting shops, carpentry, a bronze foundry and an iron foundry, capable of producing castings of 1,500 to 2,000 kilos. They employ 200 workmen, as many Annamites as Chinese; the first are employed on the forgings and the others as fitters.

The European personnel of the Société comprises:—six engineers, a doctor of medicine, thirty master miners or overseers of mines and other ranks making a total of about sixty Europeans. The native personnel totals about 10,000 furnishing about 7,000 working days. In this total a Chinese is looked upon as equal to six Annamites. A great number of the native live *en famille* and if one is able to include the merchants established at Hongay and the Annamite woodcutters, gardeners and boat-people there are about 40,000 people dependent upon the Société des Charbonnages.

This population and also the European employees, are treated gratuitously by the doctor attached to the Company. The medical staff contains in addition to the French doctor, ten Annamite hospital-attendants. At Hongay there is a hospital of 40 beds and at each working centre there is an ambulance.

Finally at Hongay there is a school directed by a French mistress, assisted by two Annamite teachers, which consists of one class for European children and two for native children.

The Mines of Kebao

The mine at Kebao was conceded in 1888 to Jean Dupuis as a recompense for his services to the French cause in the Far East. With a very rich deposit, although made up of layers of a thickness which did not permit of subterranean working, the first company of Kebao failed lamentably after having spent in about 10 years more than Fr. 10,000,000 in works insufficiently studied and hardly in agreement with the openings which then existed into the market of the Far East. Following the liquidation of the first company, the mine was put on sale and has scarcely supplied since 1901 12,000 tons of coal per annum. Actually the mines at Kebao employ three Europeans and about 300 Chinese.

The Mines of Dong-Trieu

The region called Dong-trieu forms the western extremity of the band of Rhetian earth to which belongs the deposits of Kebao and Hongay. It stretches for a length of 20 kilometres running from East to West, between Uong-Bi on the East and Maokhe to the West and consists on the one part, to the South, the chain of heights which we will call the Southern Chain, bounded on the North by the Song Da-Bach and the Northern Chain.

The Southern Chain was first of all studied by Sarran. It presents a collection of about 20 layers of from one to 10 metres thickness, giving a coal of good quality of the same nature of that from the bay of Ha-long, but generally containing less volatile matters and more ash. These layers appear in tiers on the sides, south of the chain and are worked in the Schoedelin concession (eleven seams) at Trangbach and in the Edouard concession (ten seams) at Maokhe. Others have been noticed on the Espoir and Saladin concessions without being worked. The Edouard and Schoedelin mines employ about 700 workpeople and for about 12 years have supplied about 30,000 to 40,000 tons per annum on the average.

THE NORTHERN CHAIN.—The deposits on the Northern Chain, which have recently been discovered appear to be particularly interesting. The coal which is obtained from them is a real anthracite containing one per cent. of volatile matter, very pure and remarkably hard. The reconnaissance works, at present hardly developed, show a system of at least ten seams, of which the workable thickness varies from two to ten metres coming to the surface for a distance of 20 to 25 kilometres of the N. BaoDai and of the Deo Mat-lon. These seams afford an opportunity for remarkably easy working and several concessions, Francois, Clotilde, Berthe and Desespoir have been recntly commenced.

The concessionaire of the Clotilde-Louise and Francois is now building a railway destined to evacuate the products of the mines at a point on the Song Du-Bach, situated only a few kilometres from Haiphong, where he proposes to construct a port on the river which can be reached by large ships.

Between Hongay and Dong-Trieu the Rhetian strata offers many deposits of coal worked in small concessions opening irregular layers of small workable capacity, which are, however, worked at a profit. We might mention in this region the Francis, Hien, Marcells, Paul, Renee concessions which together turned out in 1916, 33,000 tons of coal.

The discovery of deposits of rich coal at Tonkin is quite recent and has excited great interest for the colony is at present dependent upon Japan for this class of combustible.

The Phan-Me Mines

The mines of Phan-Me are situated at about 15 kilometres to the north-west of Thai-Nguyen in close proximity to the Song-Cau and the road from Thai-Nguyen to Bac-Can. Their geographical situation is scarcely favorable for the Song-Cau at this point is not navigable to any boats but those of the smallest tonnage (four to five tons at the most). But for a little time since the construction has been spoken of of a railway from Thai-Nguyen to Dong-Anh which will enable the coal to be evacuated easily and cheaply on to the delta.

The coal of Phan-Me is a pitcoal containing 24 per cent of volatile matter, 1 per cent. to 2 per cent. of sulphur and 5 per cent. to 10 per cent. of ash. Its calorific power is 7,650; it makes an excellent metallurgic coke, light and not breaking easily.

Preliminary workings have shown in the proximity of Phan-Me seven seams of coal of a working thickness varying from 1.50 metres to 5 metres. Five kilometres from this point to Lang-Cam in a hill about 200 metres high there has recently been found a collection of seams, about ten, of which the workable thickness of one is about ten metres, which is supposed to be a continuation of the collection of seams at Phan-Me, but which appears to be much less distorted than the former. Investigation of this collection of seams is being pushed with vigour. Particular importance is attached to the deposits at Phan-Me from the fact of its proximity to extensive deposits of iron ore which is very rich and pure. The creation of a large metallurgic enterprise is being planned for the treatment at Thai-Nguyen of the iron ore of the region with coke from Phan-Me.

The Mines at Phu-Nho-Quan

The above mines are situated about seven kilometres from Ninh-Binh, chief place of the province, which is itself situated about 150 kilometres from Haiphong and which is accessible to ships of large tonnage. Its situation is, consequently, particularly favorable. The coal of Phu-Nho-Quan contains on the average about 18 per cent. of volatile matters, is more sulphurous than the coal of Phan-Me, but is capable of supplying a good combustible particularly when it is mixed with the hard coals of Tonkin which have, as has already been said, a small content of sulphur. A great number of outcroppings have been found and the few workings which have been put in hand show vertical seams the exploitation of which will not be without difficulty.

Mines of Tertiary Coal

Finally mention should be made of the existence at Tonkin of numerous deposits of tertiary coal, notably along the valley of the Red River, at Cao Bang, at Dong-Giao and at Tuyen-Quang. The coal makes a good fuel. That at Dong Giao, the deposits of which have to-day been abandoned, provided from one layer of nine metres thickness, about 100,000 tons which was nearly all consumed by the railways of the protectorate. Similarly the railways of the protectorate are the principal clients of the mine at Tuyen-Quang, opened for exploitation in 1915, where a seam of an average working thickness of eight metres is being exploited and is supplying a good engine coal of which the average analysis is as follows:—

	per cent.
Volatile matter	35 to 40
Fixed Carbon	45 to 50
Sulphur	1.5 to 2
Ash	8 to 12

The workings which were primarily open are now actually subterranean. The production of this mine in 1916 was 12,000 tons and was expected to reach 15.000 tons in 1917.—Translated from the bulletin of the *Comite d'Assistance aux Travailleurs Indo-Chinois.*

Pan-Pacific Day, September 17

In many Pacific cities it is now customary to observe Balboa Day, either by a luncheon or a dinner gathering, at which there are speakers representing each race about the Great Ocean. The Governor of Hawaii as President of the Pan-Pacific Union, at the Crossroads of the Ocean, presides at the banquet in Honolulu, receiving and exchanging cable greetings from every part of the Pacific, where kindred gatherings are held of the leading men of Pacific races.

On the 17th day of September in the many Pacific lands where there is this gathering, representatives from every race about the Great Ocean meet in friendly intercourse, so honoring the memory of Vasco Nunez de Balboa who on the heights of the Isthmus of Panama first beheld the waters of the present theatre of the world's commerce—the Pacific Ocean.

On September 17th, 1915, Queen Liliuokalani of Hawaii, inaugurated at the Ocean's Crossroads, a Pan-Pacific Pageant, followed by a banquet of men of all Pacific races, and gave to the 17th September the name "Balboa" or "Pan-Pacific Day." The next year at San Diego in the great Pan-Pacific building at the exposition, Balboa Day was celebrated and cables exchanged with Hawaii's Queen, John Barrett, president of the Pan-Pacific Union in Washington, and other distinguished supporters of the Hands-Around-the-Pacific Movement.

In 1917, San Francisco celebrated the event at the St. Francis Hotel, where a Pan-Pacific banquet was held. Here some 500 men of all races of the Great Ocean sat down to listen to speeches from men of all Pacific races and again cable greetings were exchanged with Hawaii and other Pacific cities where the occasion was being observed.

On September 17th, 1918, there were Pan-Pacific or Balboa Day banquets held in Hawaii, in several American mainland cities, in China, Japan, Australia and in New Zealand. Friendly cables were exchanged between the mayors of Australasian cities presiding at Pan-Pacific functions south of the line, as well as with other Pacific lands.

It is hoped that this year in every large city of the Pacific that on Balboa Day, September 17th, that friendly Hands-Around-the Pacific gatherings will be held either by the local branches of the Pan-Pacific Union or by the Chambers of Commerce, Foreign Trade Clubs, Y.M.C.A.s, or kindred organizations.

In Honolulu last year an entire week was given over to a local Pan-Pacific Conference of the leaders of all races in Hawaii. The Chambers of Commerce, Ad Clubs, Rotary Clubs, Women's Clubs, Y.M.C.A.s and fraternal organizations all took part in the deliberations and proceedings.

It is well that at least once a year we get together with our neighbors of the different races and seek to become acquainted with them as well as to secure their co-operation in making the land we live in better because we are among its residents.—*The Mid-Pacific.*

To Get Trade in China Break Down the Language Barrier

The Open Sesame to Commercial Greatness in China is Knowledge of the Chinese Speech and Understanding of the Chinese People

MR. W. B. PETTUS, PRINCIPAL OF THE NORTH CHINA UNION LANGUAGE SCHOOL

[If there is a royal road to trade in China it is through knowledge of the spoken language. Recent years have brought this home to foreign merchants with increasing force. Hitherto the foreign buyer and seller in China has had an almost insurmountable barrier interposed between himself and his Chinese customers. Ignorance of the language has been as a rock barrier holding beneficent waters from a vast parched plain and rendering it unproductive except where energetic men facing great odds have been able to carry in buckets the water to till a diminutive area, though hoping by this sprinkle to spread fertility over the whole. Because the foreign merchant in the past has not been able directly to approach the Chinese merchant except through a Chinese middleman the enormous market of China, with its tremendous potentialities, has been but scratched. It stands to-day as one of the greatest fields in the world for the consumption of foreign manufactures and machinery. Not only this. China begs for understanding by the races who have built up the world. It needs the assistance of specialists in all branches of human endeavor, the teachers, the scientists, the engineers—but above all it requires trade and industrial development to furnish the wherewithal to enable the nation to build on its ancient foundations a structure similar to that of the foremost of the great Powers. It has the natural resources and a reserve of patient human labor such as is possessed by no other country in the world. To develop these for the benefit of China in the first place and general international trade and human good in the second all that is required is an effort to get into closer touch with the Chinese, and that closer touch can be secured quicker and more effectively through familiarity with their speech. This is so important—and is now realized more than ever by those who have been doing business in China for years past—that we make no apology for emphasising one of the most important mediums whereby the required knowledge may be obtained. The following sketch of the work of the North China Union Language School is written solely to draw the attention of foreign merchants and manufacturers to one of the chief facilities that already exist in this country for study of the Chinese language and Chinese characteristics, and we urge on all foreign concerns desirous of entering this field or expanding their existing business close consideration of what the School offers. Also we urge attention to other organizations that have been created to help the enterprising to a better footing in this great market. Employers should henceforth insist on employees knowing how to speak and deal direct with the Chinese, and the Language School is perhaps the foremost of the institutions offering the means to this end.—Editor.]

The bulletin of the National Association of Corporation Schools states that in the opinion of the Chamber of Commerce of the State of New York, American business men, as a class, are handicapped in their dealings with foreign countries because of a lack of knowledge of the languages of the people of these countries, and the Chamber has appointed a committtee to correct this situation.

The Chairman of the Chinese Chamber of Commerce in Shanghai has been quoted as saying:—

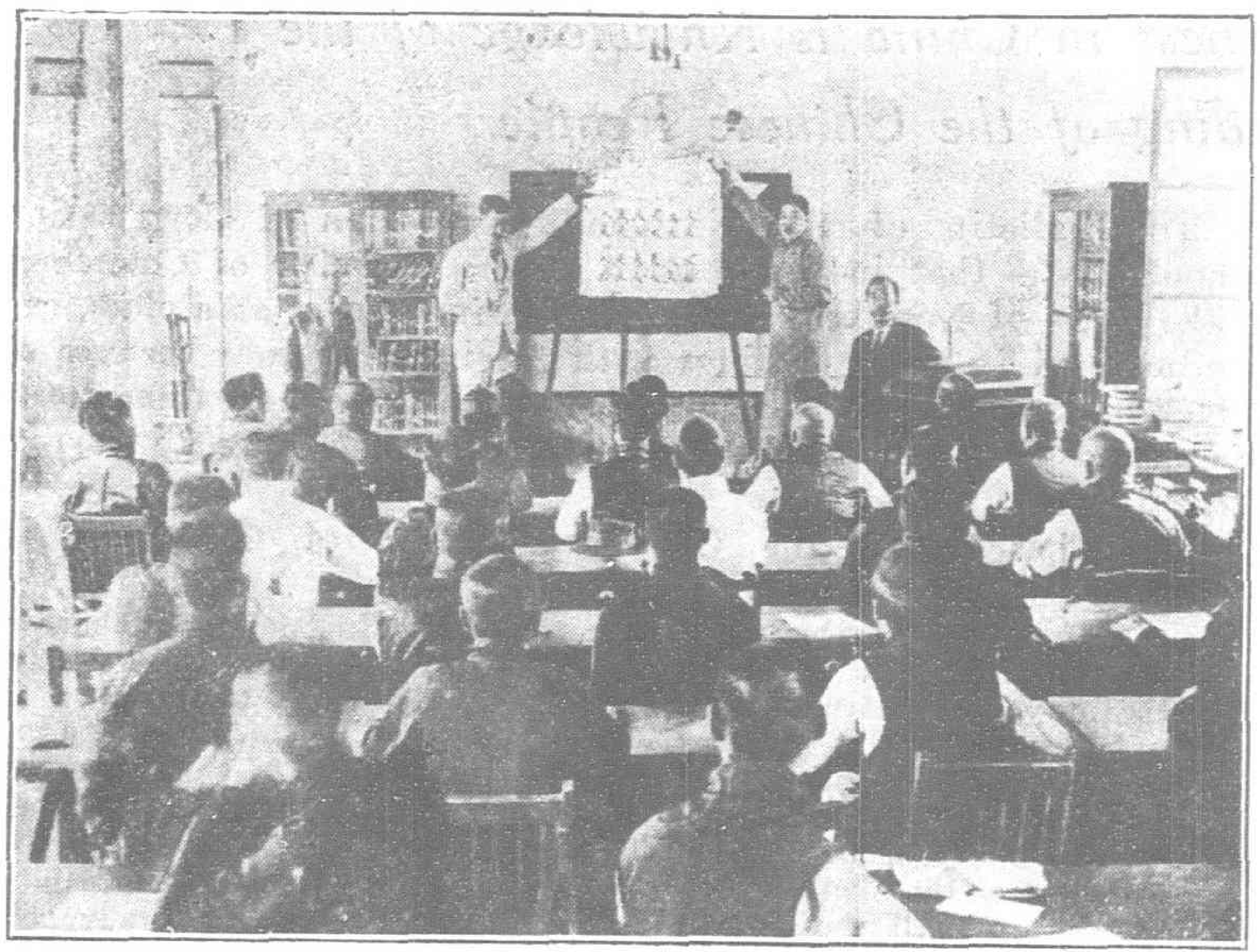
> "If we Chinese merchants were to go to England to establish a concern without the knowledge of the English language, and engage some of your countrymen as compradores and shroffs to carry on all the business, is it likely that the business would be prosperous?"
>
> "British merchants generally employ Chinese compradores in dealing with Chinese merchants. As no compradore knows everything, is it possible that they should be familiar with all kinds of goods? Furthermore, those of us Chinese merchants who have great capital and who are well versed in a certain line of business, generally hold positions of great responsibility. Such men generally have no spare time to be compradores and so do not have direct dealings with the British merchants. The sale of goods is generally done through the medium of agents. Most of the old Chinese merchants do not know English, while your Chinese compradores are not likely to be good linguists and thus our views can hardly be fully explained to your merchants."

Sir John Jordan, the British Minister in Peking, expresses his opinion on the matter of language study in an address to the North China Union Language School, as follows:—

> "Until comparatively recent times a knowledge of Chinese was confined to the consular services and missionaries. It was not a study which found much favor with the outside public of the Treaty Ports and the Chinese scholar was as often as not a synonym for a crank or a lunatic. The foreign merchant lived his own life and was quite content with his own little world, with his race course, and his club, while his wife found her time occupied with tennis and afternoon tea parties. For all the knowledge of Chinese they acquired they might have been thousands of miles away from China. Missionaries, on the other hand, obtained the right of residence in the interior, and to them we owe a very great deal of the knowledge of the Chinese language which is being spread so rapidly nowadays by such institutions as the Union Language School. In the old days the merchant and the missionary were far apart and there was very little communication between them. It is greatly to the advantage of all of us that this state of affairs is fast disappearing. Railways too have brought increased means of communication, trade has been obliged to seek new outlets. Cities like Changsha, for instance, which were once hermetically sealed to the foreigner, are now thriving with business from abroad.
>
> "The merchant now finds it as necessary to know Chinese as the missionary. There must be hundreds of young Americans and English men scattered over the country pushing the trade of such immense concerns as the British-American Tobacco Co., the Standard Oil, the Asiatic Petroleum Co.; and, believe me, the time is not far distant when the foreign merchant will be found in every important centre in China. Young men now realize that a knowledge of the language of the country is a valuable asset which will become more valuable as time goes on. In a few years foreign firms when advertising for assistants will stipulate for a knowledge of Chinese as a necessary qualification."

MR H. W. CHIN, HEAD CHINESE TEACHER OF THE NORTH CHINA UNION LANGUAGE SCHOOL

The compradore system has not proven to be a success. In a bilingual business the man who speaks the two languages really makes the decision. The interpreter who is really qualified to interpret is better able to direct the business than the principal who does not know the language of the people with whom he is dealing. In the past the fear of the difficulties in mastering Chinese and the known poor quality of the teachers have prevented our business men beginning the study of the language, or have discouraged them soon after a beginning has been made. Attempts have been made to teach Chinese in Europe and America but have not proven thoroughly successful, because of the lack of an adequate teaching staff, some institutions having a foreign teacher only, and none having more than one or two Chinese, and because students studying in schools outside of China do not have the proper atmosphere in which to work on the Chinese language.



PSYCHOLOGICAL INTELLIGENCE TESTS USED IN SELECTING NEW TEACHERS FOR THE NORTH CHINA UNION LANGUAGE SCHOOL

The North China Union Language School with nine years' experience has proven that the language can be taught successfully along modern lines by Chinese teachers who have been carefully selected and well trained. This school now has a teaching staff of sixty Chinese, who do nine-tenths of the teaching. Twenty senior foreigners in the diplomatic, business and missionary groups, each give some time to teaching in this school. During the past year the enrollment in the school was 175 students, who came from twelve American and British firms, from five Legations and from a score of missionary societies. The work of the school is the teaching not only of the Chinese language, but also of Chinese history, religions, commerce, sociology, customs, geography and economics. The language is taught according to the Direct Method by trained Chinese teachers, under the supervision of the principal. Half of the time is spent in small group classes and the other half is spent with individual teachers. Two or three hours per week with foreign teachers suffice for phonetics, grammar, translation work, and general explanations. Chinese life and thought and missionary methods are taught by lectures, seminar discussion groups, assigned readings, observation, and supervised practical experience.

The School is located in Peking, because no school outside of Peking could secure such a staff of Chinese teachers, or a group of foreigners so well qualified to assist students in mastering the language and in obtaining a knowledge of things Chinese. Peking is the capital of the country; it is the educational as well as the political centre of China, and the intellectual atmosphere of the place stimulates the students to study their subject in its many phases. The bracing climate of the north makes hard work possible. The Pekingese, or northern Mandarin dialect, which is taught, carries with it the prestige of the capital. The presence in Peking of some two hundred and fifty missionaries engaged in all forms of missionary work, of the large foreign business and diplomatic community, and of 800,000 Chinese makes this the most effective and practical training centre, the instruction being given in the environment where it is to be used by those who have first-hand knowledge of the subjects they teach.

The teachers have been selected from more than four hundred candidates. During the early years the labor turn-over was large. During the past two years psychological and intelligence tests were applied to all candidates and these have reduced the turn-over to practically nil. Regular instruction in psychology and pedagogy, as well as in special language teaching problems has been given the teachers, who do all of their work under the supervision of the principal of the School and his assistants.

All the students of a given grade meet together during the first period of the day, when the new work is given in lecture form in Chinese by the head teacher. During the remainder of the day the students are alternately in small groups and with individual Chinese tutors, and the work is amplified and reviewed until all can both follow and engage in fluent conversation.

SOME OF THE CHINESE TEACHING STAFF OF THE NORTH CHINA UNION LANGUAGE SCHOOL. THE FULL FACULTY INCLUDES SIXTY CHINESE AND TWENTY FOREIGNERS

The part of the foreign teachers is to explain and clarify what the students have done; to lecture them on things Chinese and to lead the seminar discussion groups. During the past year the following are among the seminars that have been conducted, each seminar meeting for an hour and a half once a week for ten or more weeks: Those who have lectured to the school include the President of China, the two living ex-presidents and the British and Japanese Ministers:—

Ancient and Mediaeval Chinese History,
Chinese Economics,
Chinese Governmental System,
Chinese Religions,
Current Chinese History and China's Foreign Relations,
Social Conditions in China.
The Character and Customs of the Chinese People.

Some students are in special conversation classes which study only the spoken language, learning to understand it and use it and do not devote any time to the study of the Chinese characters. It has been found feasible to learn to speak without learning to read or write. This is not strange since more than nine-tenths of the Chinese can neither read nor write. Other students master both the spoken and written language, but in all cases hearing and speaking precede reading and writing.

Because of the variety in the student body, some planning to become consuls and diplomats, some to enter business, some to practise medicine, others to teach, become secretaries of the Y.M.C.A. or engage in other forms of missionary work, it has been necessary to provide special classes which study appropriate vocabularies, adapted to prepare them for the work which they are to do. Not one of the least of the advantages of this School is that while a student one becomes acquainted not only with many of the important Chinese of Peking but also with the foreigners of the various groups with whom one will later be associated in China..

The Language School is now planning to secure $500,000 equipment in land, buildings, residential quarters and library.

More business houses should follow the example of the Legations, the customs and the missions in giving their new men six months to a year when they first arrive, to be given exclusively to a study of the language and of things Chinese. They should then give them an allowance for a personal teacher in order that they may continue their study, devoting one or two hours a day to it. Some houses have depended in the past on securing men who could speak Chinese by getting those who had already been trained in the Customs, consular services, or in the missions. This supply is evidently inadequate.

The Language School is controlled jointly by the British and American legations, the British Chamber of Commerce, the American Association of North China and eight large British and American missionary societies. At the request of these organizations the Y.M.C.A. has placed one of its secretaries, Mr. W. B. Pettus, in the School as principal Mr. Pettus has had special training and experience in linquistics and phonetics, and is a member of the International Phonetic Association and of the American National Association of Corporation Schools.

The Union Club of China

The latest co-operative measure in China is the newly organized Union Club of Shanghai, an organization of British, American and Chinese businessmen which has been formed to facilitate and widen social relations which hitherto have lacked either a unifying or radiating centre. The Club will be an up-to-date institution, with temporary quarters in the Chartered Bank. It will be open from 8 a.m. to 2 a.m., so that the usual club conveniences will be available at all hours. It aims to become the social centre of businessmen, and it is expected that Anglo-American-Chinese social affairs will become a feature of its life.

The conditions of membership are (1) election by the Committee after recommendation by the Chamber of Commerce of the nationality of the candidate; (2) possession of a share of Taels 250 in the Company—the Union Proprietary, Ltd.—formed to own the property of the club (which from the nature of its constitution has no individual nationality); and (3) the payment of a monthly subscription of $10.

The Committee for the first year of the Club's existence will consist of three Chinese, Messrs. Chu Pao-san of the Ningpo Commercial Bank, Pan Ching-poo of Jardine, Matheson & Co., and Chun Bing-him of A. R. Burkill & Sons; three Americans, Messrs. T. F. Cobbs, of the British-American Tobacco Co., G. H. Dollar of the Robert Dollar Co., and W. C. Sprague, of the Standard Oil Co.; and three Britons, Messrs. A. W. Burkill of A. R. Burkill & Sons, H. H. Girardet of Reiss & Co., and H. G. Simms of the North China Insurance Co. The President of the Club during its first year is Mr. John Johnstone, the Vice-Presidents being Mr. T. F. Cobbs and Mr. Chu Pao-san.

The constitution of the Club provides that after the election of the Committee—three of whom must be British, three American, and three Chinese—the members shall proceed to elect three Committeemen, one of British, one of American and one of Chinese nationality, to hold among them the offices of President and Vice-Presidents for the ensuing year. The three so elected are then to decide which of them is to become President, the remaining two becoming Vice-Presidents. This method was decided on as being the most likely to ensure an equal distribution of authority in the Club amongst the three nationalities represented.

Diplomatic, judicial or consular officials of high rank are eligible for honorary membership as also are naval or military officers of corresponding rank, their election to be decided by a unanimous vote of at least seven members of the Committee.

Mr. L. Bliss, lately Acting Secretary of the Country Club, has been appointed foreign Secretary to the Club, and Mr. Chang Nieh-yun will act as Chinese Secretary in an advisory capacity. Mr. E. M. Gull is temporarily Acting Secretary of the Proprietary Company.

The "Trans-Pacific"

A new monthly journal devoted to financial and economic matters has been issued in Tokyo, Japan, under the title of the "Trans-Pacific," the publisher being Mr. B. W. Fleisher, of the "Japan Advertiser." The get-up of the paper is highly creditable, the printing being excellent. The contents range the field which is embraced by the countries which border the Pacific, and should prove interesting to all who are engaged in enterprise in this part of the world. The editorial section is not characterised by any particular strength, but no doubt that will improve as time goes on if international affairs in this quarter do not become too complicated. The editor emphatically announces that the paper is not political, a policy which will unquestionably prevent his journal from conveying to anyone in the outside world any guidance on the leading features of economic development in the Far East. All economic expansion of any consequence in China, for instance, has been affected, in the past, by the political ambitions of various Powers, and this will continue unless the projected enlarged International Banking Consortium is able to embrace on an equal footing every nation with interests in this country. The whole of China's railway system has been built up on political ambitions; the concession hunting has been political and still is in specific instances; and the loans or various kinds that have recently been made are more political than anything else. No paper that deliberately sets out to ignore the politics that are interwoven with almost every big deal in China can adequately represent to other parts of the world exact economic conditions in the Far East. Apart from this, however, the new paper will no doubt make a place for itself among the several journals now endeavouring to awaken world interest in the great markets embraced in the term Trans-Pacific.

Some Information about Chinese Wood Oil

By D. Y. Lin, M.F., University of Nanking

Of all the vegetable oils produced in China, the wood or *tung* oil ranks third in importance, the first two being the soya bean and the peanut oils. Recently a great deal has been written about soya bean, peanut and other oils, and very little said about the wood oil. It will be seen, however, that the wood oil industry is a growing industry and it deserves the attention and investigation of both the growers and the merchants. We have during the last two years received many letters from some of our inquirers interested in both the cultivation and the manufacture of wood oil, and we hope that the information given in the following paragraphs will help in a small way these interested inquirers to understand, and to appreciate the possibilities of the wood oil tree, and that greater efforts will be made by them not only to start more *tung* oil plantations but also to improve the present methods of cultivation, manufacture and marketing which we shall see are far from being efficient.

Wilson: A Naturalist in Western China

THE TUNG-OIL TREE (ALEURITES FORDII) IN FLOWER

Distribution of the Wood Oil Tree

The Chinese wood oil or *tung* oil is obtained from the seeds of *aleurites*, a small genus belonging to the *spurge* family. According to Wilson there are two species of *aleurites—aleurites montana* and *aleurites fordii.* These two species for the most part occupy different geographical areas. *Aleurites montana* known to the natives as *mu-yu shü* meaning 'wood oil tree,' occurs in South China, common near Wuchow; while *aleurites fordii* known as *tung-yu shü*, literally '*tung* oil tree,' occurs in Central and Western China and is the hardier and more widely distributed of the two.

The *tung-yu shü* (*a. fordii*) is by far the more important, for it furnishes fully nine-tenths of the so-called wood oil used in, and exported from, China.

The two species of *aleurites* are different. In *aleurites montana* the flowers are borne on the current season's shoots at the time when the leaves are expanded. The fruit is egg-shaped, sharply pointed and unevenly ridged on the outside. In *aleurites fordii*, however, the flowers are borne at the ends of the previous year's shoots before the leaves open. The fruit is flattened-round apple-like and perfectly smooth on the outside.

Both *mu-yu* and *tung-yu* trees occur abundantly within their ranges. No degree of heat can injure them They grow luxuriantly in the region of gorges and in hilly country up to 2,500 feet in altitude. They are most commonly seen in rocky situations and on the poorest of soils. They withstand drought. They flourish in cold climates and grow as far north as 24° or farther, but often they fail to bear fruit on account of cold.

The wood oil trees are rapid growers, and they reach about twenty feet in height and six to ten inches in diameter Some are said to reach a much greater size.

The tree is deciduous, shedding its leaves in October and November. The leaves are large and cordate. In March or April the tree blossoms and the flowers produced in great profusion are white, stained with pink and yellow markings

The tree as a rule is a low-growing tree and because of its stately appearance with its green and smooth bark and spreading branches, it has been some time called the national tree of China.

The wood, whitish in color, is light and soft but when seasoned is hard and durable and not liable to warp or crack. When large enough it is used for the manufacture of trunks musical instruments, fine boxes, etc., but as a rule it is used for fuel.

Method of Cultivation

The tree grows best on hillsides. It thrives on the poorest of soils where there is a minimum rainfall of thirty inches It is a rapid growing tree. When cultivated it often grows to the height of three or more feet the first year. The general method of cultivation consists in sowing the seeds in early spring. Two seeds are sown in a spot of from three to five feet in diameter. Spots are cleared of grass and the soil is properly kept in loose condition for the retention of moisture. In case both seeds sown germinate, the stronger seedling will be selected for growth.

Often, however, seeds are first sown in seed beds and the resulting seedlings, when they are one year old, are transplanted to prepared spots on the hill, but such a method of starting a *tung-yu* orchard involves too much labor and besides the number of failures resulting from such transplanting is so great that direct seeding is generally the rule.

The most common spacing for the growing of wood oil trees is eleven feet by eleven feet, or 60 trees per *mow* (a *mow* is about one sixth of an acre). If the land used is cultivable and of good topography, farmers often raise crops in between rows of trees during the two or three years before they begin to bear. Such, however, is seldom done, because the soil devoted to the cultivation of *tung-yu* is generally too poor for the growth of agricultural crops.

The growing importance of wood oil has led countries other than China to look into the possibilities of cultivating the tree within their own lands. The U. S. A. in particular has made rather extensive investigations along this line and it is reported that the soil and climatic conditions in some of the southern states* are such as to permit of the tree's growth and cultivation. Yet it is safe to say, however, that China, the home of the wood oil tree, will always be the chief source for the production of wood oil for the rest of the world.

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*U. S. Department of Agriculture circular 108.

I wish to acknowledge my indebtedness to Messrs. Norman Shaw, A. Hosie, and E. Wilson whose works I have freely consulted in preparing this paper.

The age when the tree begins to bear depends to a considerable extent on the richness of the soil and the amount of rainfall it receives the first few years after planting. In some localities it produces fruit in three years, in others five years and in still others seven years—all depending on the varieties of the species and on site factors. However, the usual age of fruitage is from the fourth to the sixth year. The tree continues to bear for about ten years and if properly taken care of would no doubt retain its fruiting power for a longer period.

The fruits are green, hidden amongst the glossy-green leaves. They resemble large hickory nuts and when ripe, generally in the month of September, they burst open and the seeds fall out. Each fruit contains three to five seeds which resemble somewhat the triangular Brazil nut in shape and color, but are much smaller.

Fruits are gathered before they are perfectly ripe. They are then placed in large iron pans about two feet in diameter and are stirred about over a good fire until parched. This causes the husks to open and the seeds are then extracted.

Another way of extracting seeds is by collecting the fruits into heaps which are covered with straw and grass. Fermentation then sets in and quickly disposes of the husks, after which the seeds are removed.

The Oil Extraction Process

The process of extracting the oil is very simple. The seeds are placed in a circular stone trough where they are crushed by a heavy stone roller drawn by buffalo, cow or ass. The pulverized mass is then partially roasted in shallow pans, after which it is placed in wooden vats, fitted with wicker bottoms, and a further steaming process takes place over boiling water. Next with the aid of an iron and straw, the meal is made into circular cakes These cakes are arranged edgeways in a large press and when full, the pressure is applied. This is usually accomplished by a system of wedges which are driven in one after another by means of a huge battering ram until the brown, somewhat watery and heavy smelling oil is crushed out into the vat below The oil is then collected in vessels, is slightly heated, and after being freed from sediment by straining through coarse grass cloth is ready for market. Often, however, the heating process is carried too far, and the oil becomes dark brown instead of retaining its desired light yellow color. As a rule the oil yield is about 40 per cent. of the original weight of the kernels. The refuse cakes are used as fertilizers.

Composition and Properties of the Oil

The wood oil consists chiefly of the glycerides of oleic and elacomargaric acids. According to Fahrion it contains two to three per cent. of saturated fatty acids and about ten per cent. of oleic acid. On keeping wood oil becomes jellified and solidifies partly. It is readily identified by its strong characteristic smell Its specific gravity is higher than that of any known oil excepting castor oil. On account of its pronounced drying power, wood oil has been frequently used as a substitute for linseed oil, whose drying properties are not as strong. The oil is very poisonous when fresh. The refractive index of wood oil is higher than that of any known fatty oil. The *tung* kernels contain about 53 per cent. of oil but the secured yield of oil under native processes amounts to only 40 per cent.

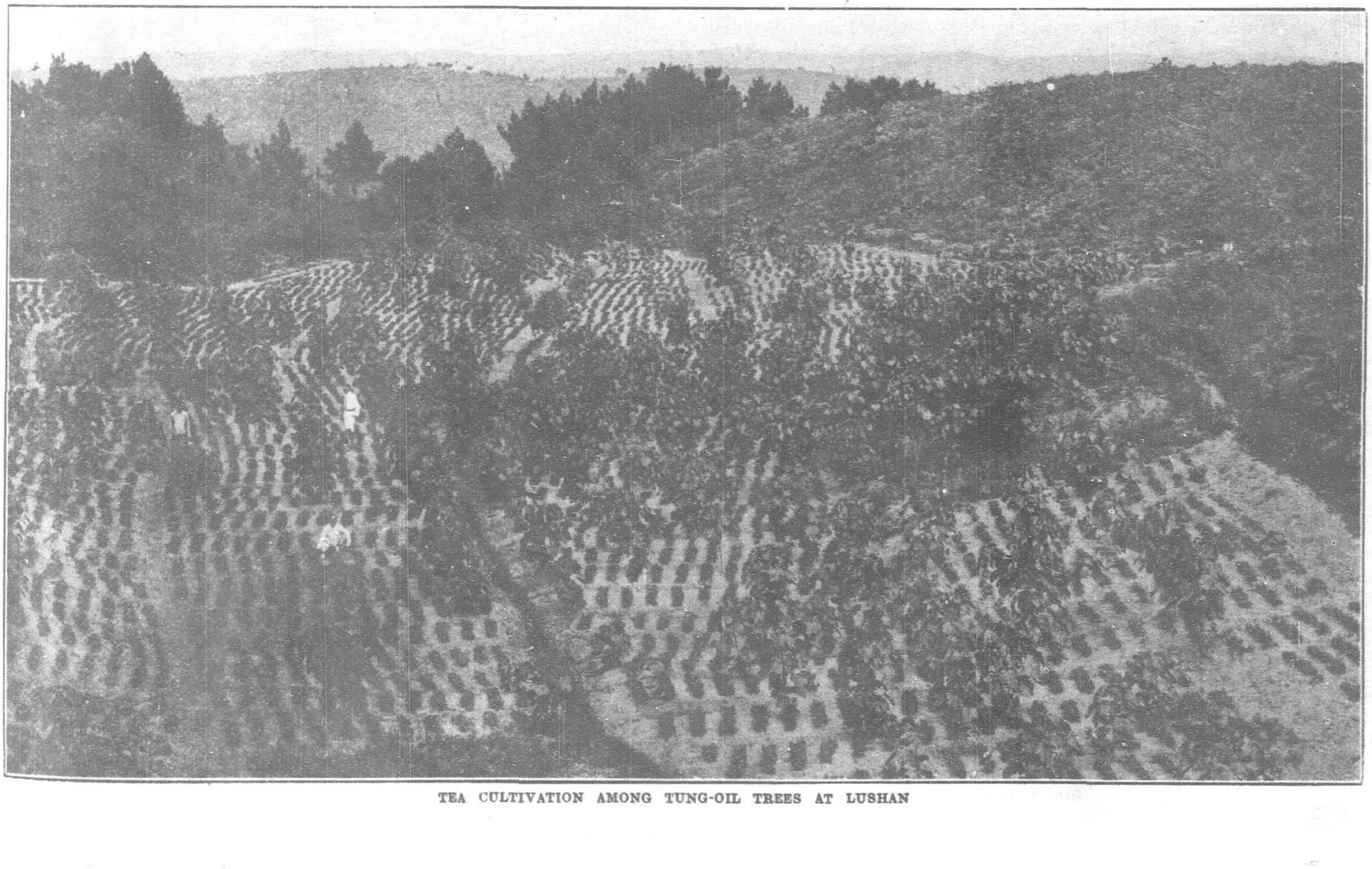
The Uses of Wood Oil

The refuse of the nut, like the oil, is poisonous and is chiefly used as fertilizer. Often, however, after the oil is extracted, the meal is burned to fine ash or soot which is then mixed with the oil to make a paste used for caulking boats. A mixture of the oil with lime, bamboo shavings, etc., is also used for caulking boats.

Wood oil is used throughout China as a paint oil. Native boatmen never paint their boats but simply coat them with the cruder grades of this oil which not only gives the woodwork a bright lustre, but also acts as a preservative.

Wood oil is used as a dressing for leather, as a varnish for furniture, and for soap making. When mixed with colors it is used for various kinds of color painting As an adulterant in the manufacture of lacquer varnish and as an illuminant, it is also extensively used.

Large quantities are also consumed for water-proofing paper, silk gauze, pongees and all kind of tissues. The best kinds of Chinese ink are obtained by burning the oil with a regulated amount of air. The fatty acids of wood oil have been recommended as a substitute for shellac in the manufacture of spirit lacquers



TEA CULTIVATION AMONG TUNG-OIL TREES AT LUSHAN

The matter of adulteration should be of special interest to merchants, for adulteration with stillingia oil, soya bean oil, peanut oil, rapeseed oil and sesamum oil has been practised to a considerable extent, and no doubt a great deal of injury has been done to foreign trade by such adulteration. Wood oil when mixed with other oils does not coagulate and is of little use

The following rules as determining the basis of character and quality for wood oil were adopted by the New York Produce Exchange:—

Prime Chinese oil shall be pale in color (according to season's production), merchantably free from foots, dirt, and moisture, the total impurities not to exceed 1 per cent.; impurities not plainly adulterations up to 5 per cent. shall not justify rejection, but allowance to be made by sellers for such impurities in excess of 1 per cent. Prime oils shall show with a Tagliabue viscosimeter at a temperature of 70° F. from 7.25 upward. The oil is to satisfy the requirements of either Bacon test or the Worstall test. Bacon test might be of interest, and it is as follows:—

In four test-tubes of $\frac{3}{4}$ inch in diameter and 4 inches in length are placed: (1) 10 c.c. pure *tung* oil: (2) 10 c.c. of same *tung* oil containing 5 per cent. of a vegetable oil (preferably soya bean or sesame oil); (3) 10 c.c. of *tung* oil containing 10 per cent. of vegetable oil; (4) 10 c.c. of the sample to be tested. The four tubes are then immersed in an oil bath having a temperature of 288° c., and after the tubes have been maintained at a temperature from 280° to 285° c. for exactly nine minutes they are withdrawn for comparison. A small knife is then used to stab from top to bottom into the tubes. Pure oil gives a hard clean cut, and when the knife is withdrawn the incision looks like a straight line, while oil with as little as 5 per cent. of an adulterant will invariably be softer, and the incision has a peculiar feathered effect. The oil containing 10 per cent. of an adulterant will be soft, and if the presence of an adulterant exceeds 12 per cent. the oil will remain entirely liquid.

It will be seen from the above test that pure oil when solidified gives a product that is pale, firm, and free from stickiness. It might be mentioned also that if small portions of it are rubbed in the hand, they should break down completely into a soft crumbly mass which should not adhere to the fingers.

Chinese wood oil should not be confused with Japanese wood oil which is obtained from the fruits of *elaeococca vernicia*. Japan wood oil is not as valuable as Chinese wood oil. It differs from the latter by its lower specific gravity, and its lower iodine value. In the polymerisation test Japanese wood oil does not gelatinise, hence it is not accepted in the trade as replacing the Chinese wood oil.

The Wood Oil Industry

Practically the entire output of wood oil is produced in the provinces of Szechuan, Kweichow, Hunan and Hupeh besides the Kwangsi product. The following table shows the total original export (i.e., combined total export abroad and to Chinese ports) for the whole of China:—

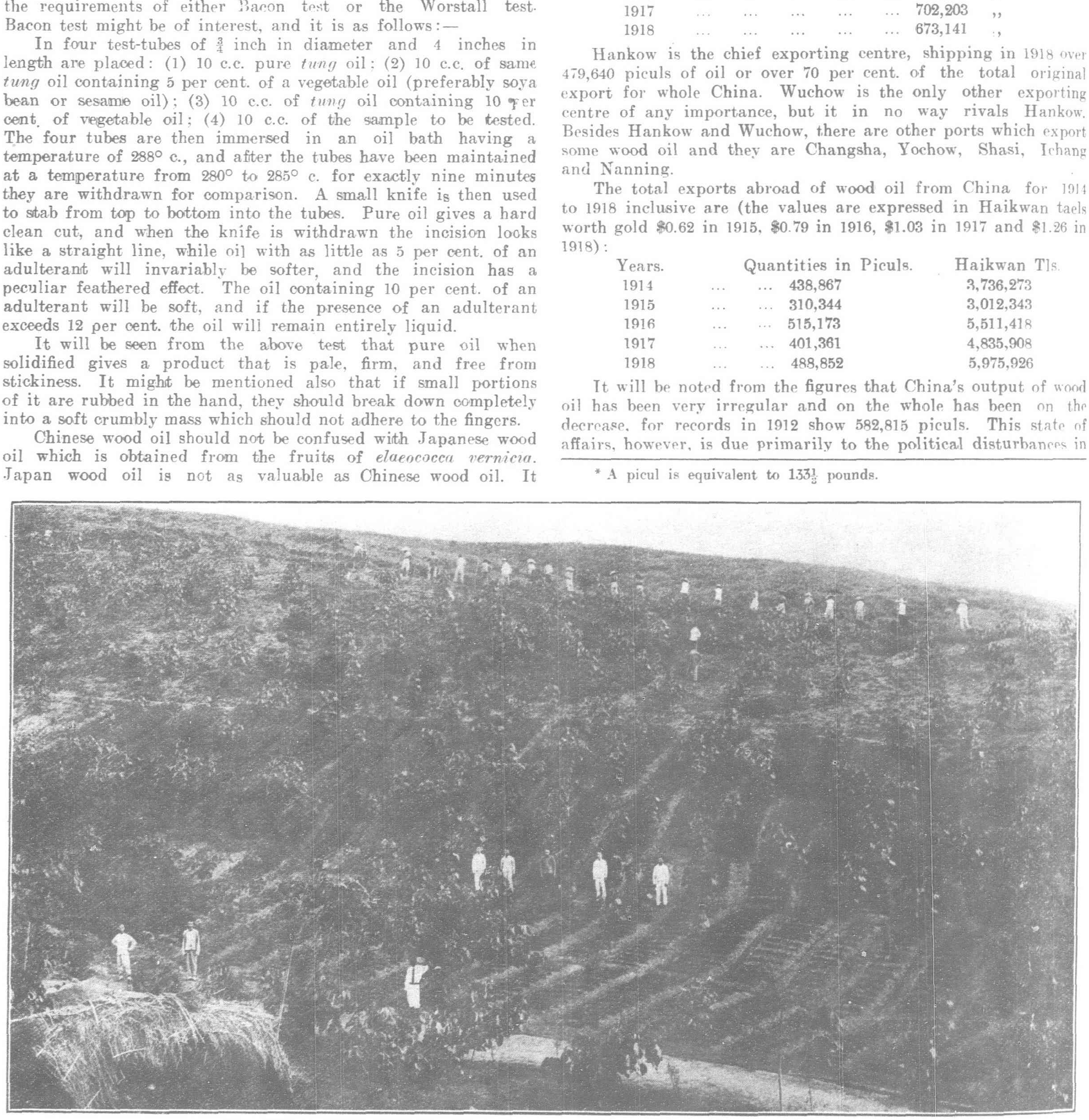
Years	Quantities
1914	754,632 piculs*
1915	635,728 ,,
1916	806,593 ,,
1917	702,203 ,,
1918	673,141 ,,

Hankow is the chief exporting centre, shipping in 1918 over 479,640 piculs of oil or over 70 per cent. of the total original export for whole China. Wuchow is the only other exporting centre of any importance, but it in no way rivals Hankow. Besides Hankow and Wuchow, there are other ports which export some wood oil and they are Changsha, Yochow, Shasi, Ichang and Nanning.

The total exports abroad of wood oil from China for 1914 to 1918 inclusive are (the values are expressed in Haikwan taels worth gold $0.62 in 1915, $0.79 in 1916, $1.03 in 1917 and $1.26 in 1918):

Years.	Quantities in Piculs.	Haikwan Tls.
1914	438,867	3,736,273
1915	310,344	3,012,343
1916	515,173	5,511,418
1917	401,361	4,835,908
1918	488,852	5,975,926

It will be noted from the figures that China's output of wood oil has been very irregular and on the whole has been on the decrease, for records in 1912 show 582,815 piculs. This state of affairs, however, is due primarily to the political disturbances in



AGRICULTURAL CROPS GROWING AMONG ROWS OF TUNG-OIL TREES AT LUSHAN, KIANGSI the producing regions which have been almost continual in one form or another since the founding of the Republic. Take for instance Changsha. Changsha has always been one of the leading exporting centres in Central China, but in 1917 and 1918 when she experienced the worst horrors of civil strife, she exported only 15 and 151 piculs respectively. Then to this disturbed internal condition must be added the fact that practically all the European markets have been cut off since 1914

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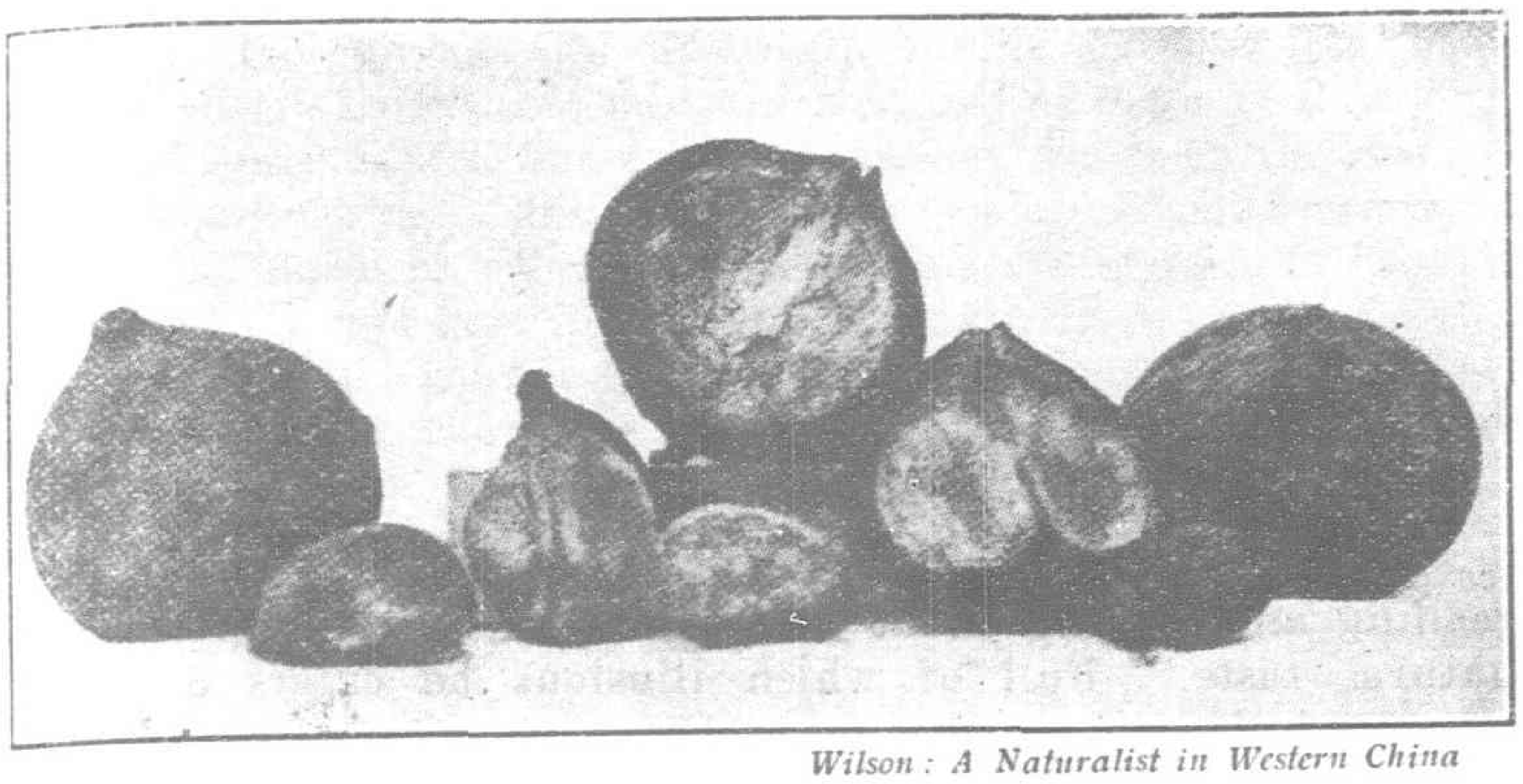
* A picul is equivalent to 133⅓ pounds.



Wilson: A Naturalist in Western China

THE TUNG-OIL FRUIT

Foreign Consumption of Wood Oil

The countries to which wood oil is shipped are U.S.A. Great Britain, Germany, the Netherlands, Belgium and France The United States, however, has always been the greatest consumer. Her 1918 consumption figured in gold dollars was more than $5,790,000 or 77 per cent. of the total value exported (This includes the large exportation through Hongkong).

The following table should be of interest:—

Years.	Total Export.	Total Export to U.S.A.	Per cent. Total Exported to U.S.A.
1914	438,867	265,983	61 per cent.
1915	310,344	215,921	69 ,,
1916	515,173	404,725	79 ,,
1917	401,361	301,306	75 ,,
1918	488,852	380,436	77 ,,

Regarding the price of wood oil, the following extract taken from a report of the Vice-Consul at Hankow written in November 1916 will be of interest: "The Hankow market for wood oil opened in 1916 at Tls. 10.20 per picul, or approximately $7.65 U.S. currency at exchange rate of .75, per picul of 133⅓ pounds. It remained steady until the last of February when political conditions in the region of production caused prices to rise until the maximum of the year, or Tls. 14 ($10.50 gold), per picul was reached. It then rapidly declined until the latter part of April when the market value sank to Tls. 9.20 ($6.90 gold). From May 6 to June 15 the price once more rose to Tls. 10.80 ($8.10 gold) only to drop again to Tls. 9.60 ($7.20 gold) in the early part of July. From this point until a figure of Tls. 11.40 ($8.55 gold) was reached. At present the market price for wood oil is Tls. 11 ($8.25 gold) per picul. These rather wide fluctuations in the market values were due primarily to unsettled political conditions throughout the country."

The average price per picul for 1917 was Tls 12.47 and that for 1918 was Tls. 10.17. It is reported that the prices this year have been unusually high. In the month of April it averaged Tls. 15.20 per picul (this included both packing estimated at Tls. 1.60 per picul and export duty at Tls. 0.30 per picul); but by May 31 it jumped to Tls. 19.60. It is pretty certain that such high prices will stay until peace is established in China

Some Suggestions

After having studied the subject of wood oil in a general way for some time, I cannot refrain from offering a few suggestions which in my mind should be carried out for the future development of the industry. These brief suggestions may be discussed under the following heads·

1. CULTIVATION.—(*a*) Some systematic investigation and selection of tree seeds ought to be carried out in cooperation with some commercial seed dealers and the growers. As the thing stands now, the growers generally do not know whether they are getting the best and the most reliable seeds for their particular regions. Free distribution or distribution at cost price of the selected seeds could be done to great advantage through agricultural societies and colleges.

(*b*) Attention should be given to cultivation and artificial pruning if necessary, in order to retain the productive power of trees for a longer period.

(*c*) In collecting of fruits and seeds, some better methods ought to be devised so that it will not be too much time consuming and the tree is not badly damaged.

2. MANUFACTURE.—(*a*) The present method of crushing the seed is too crude and consequently the waste is too great. Some simple machine ought to be devised for more thorough crushing so that the largest amount of oil could be extracted. The average secured yield of oil in most cases is seldom over 40 per cent. Now supposing a simple machine is used which is capable of extracting 50 per cent. out of the maximum 53 per cent. of oil, it means that there is a saving of over a million taels each year.

(*b*) The heating process is often carried too far with the result that the oil becomes dark brown instead of retaining the desired light yellow color. Some device for regulating such process ought to be inaugurated to offset the present haphazard way of heating.

3. MARKETING.—(*a*) Some facilities ought to be instituted for the benefit of the growers so that they can ship and sell their product more readily. The establishment of small local depôts in the different producing centres will be very desirable.

(*b*) To standardize and at the same time prevent adulteration, which is practised to such a great extent, the service of some authorized chemists to be supported preferably by merchants interested in the trade should be employed.

No doubt there are other suggestions which might be given, but it is clear that there is plenty of room for improvement in the whole wood oil situation as it stands to-day in the minds of investigators and dealers.

* * *

To sum up let me say that the information set forth in the foregoing paragraphs is very general and incomplete, but it is hoped that as time goes on more data can be obtained so that a better account can be gotten up. I have taken the liberty of offering a few suggestions which may not be practical from a business standpoint, but it is hoped that our interested merchants, especially the American importers, will take some constructive action now so that the trade which is still in its infancy could be made to develop to unprecedented levels in the next decade.

As a result of the continued refusal of Europe and the United States to take South China tin at a rate which will make mining of the metal possible in spite of the low price in silver which present gold prices entail at current silver exchange, the production of tin in Yunnan Province, the basis of the tin industry of Hongkong, has all but completely collapsed. Estimates of production at the present time indicate that it has fallen off all the way from 50 to 80 per cent., i.e., the production of the Yunnan fields the current year will run only from 2,500 to 6,000 tons, instead of 12,000 tons last year. The rainy season in Yunnan was slow in coming on this year, with the result that the railway and other means of transport have been more open than usual, and in the ordinary course of things the supply of tin coming from the mines would have been above normal. Prices of the metal at Hongkong, however, have been constantly on the decline until during this summer 99 per cent. metal has been quoted at $84 local currency per picul of 133⅓ pounds; 98 per cent. at $83, and 96 per cent. at $77. While these prices at present exchange are $69.72, $68.89, and $63.91 gold, respectively, they compare unfavorably with normal prices of from $95 to $105 in local currency, which is the currency in which costs must be computed. Under present exchange there is little chance of any revival of the trade. The situation has come to be so serious in the mining fields that a great proportion of the miners have left work and have sought other employment, thus not only reducing the possibility of production at the present time, but destroying the organization on which future production in a large measure must rest.

Of Curio Dealers

BY GERALD KING

Peking abounds in the shops of curio dealers. In every street or lane there are one or two, and in one district there is a whole street where every other shop sells nothing but antiques. London, Paris, or New York, cities far more populous and wealthy, have nothing like such numbers. The reason is, we think, that whereas the curio dealer abroad has a hard life for which few people have the necessary qualifications of shrewdness, expert knowledge, patience, and *savoir faire*, every Chinese is a born trafficker in articles of bigotry and virtue. His long thin fingers fit themselves naturally around the swelling side of a porcelain vase; his face naturally assumes an air of gentle cynicism as he brings it to the light, and very little escapes the scrutiny of his slanting eyes. And when it comes to the bargain!

The Chinese dealer probably begins his studies at about 16, when as a small assistant he is thrown into a curio shop on no wages but his keep. For some years he has nothing to do but clean the shop, to hand tea to the guests, and to carry the blue cloth bundles in which his master wraps up his wares when they are sent for a customer's inspection. During this time he must show himself alert and willing: he must not fear the monotony of fetching and carrying, and he must keep his mouth invariably shut. With the passage of time other assistants leave or are promoted, and he may rise to be a wage earner. His first salary will be about $6 a month and his keep. He now has more to do with curios: he hands them down from the shop shelves at his patron's call, or squats and unties the bundles in the purchaser's home. All this time his eye is becoming used to colour in its finer shades. He is imperceptibly learning, if he has the makings of a dealer, how to place the more common types at a glance, and what points betray a vase's origin. His next step is when he is allowed to make purchases. These usually have a very modest limit, say about $10: above that everything has to be referred to the manager. Then he is gradually allowed to make a price. This price making is the most important part of the small dealer's trade. He knows the cost price of everything in the shop, and he also knows the price at which his master will sell. His business is now to judge the patient, and to get as much as possible from him. This needs an appraising eye, and a nice talent for gauging probabilities Is the patient likely to become a regular customer? Will it be wisest to regard the bargain in hand as the only one, and squeeze out the last cent, or will it be best to spare one who may become a regular customer?

There are many ways of simplifying these problems The usual, most profitable, and easiest prey, is the globe trotter. He wants something good for about twenty dollars. With him there are many helps. First of all his status is revealed either by his guide or by the rickshaw coolie, who announces "a guest from such and such an hotel" and hopes to be rewarded for the information. Then the globe trotter usually betrays quickly what interests him and what does not, which gives good grounds for classification. He often presumes from the salesman's broken English that his comprehension of remarks in English is equally faulty: an expensive assumption. And finally, it is the globe trotter's pleasant vices that become his sharpest punishments. He usually reason on these lines. "I am in Peking where the best porcelain can be had. I must be able to get it much more cheaply than I should were I to go to Moses, Aaron and Levi on Broadway. I shall very likely happen on some find which will repay me many times its cost. And, though I don't spend all my time reading and talking about art, I know I've got a pretty good natural taste." Full of which illusions he enters a dealer's store and therein perishes miserably.

When the visitor comes into the stone paved room crowded with badly arranged porcelain, enamels, and cloisonnés, with all sorts of pretty toys lying between the larger pieces, and rolls of pictures standing like umbrellas in the corners, two or three assistants rise to greet him. Their manners are faultless, though inclining rather to the sombre than the gay. They betray no exultation over the plumpest victim that the Gods deliver into their hands. Vases are brought forward and pictures unrolled, rugs are spread out, until the patient betrays an interest Yes, the dealer confirms him, that is a good thing. He must understand curios if he selects that one as he has done If there be a flaw, it is immediately exhibited. A crack, as you see, a deep crack, running from the mouth down the side. A most undoubted crack, but on such an old piece! It has had to withstand the chances of so many years and the handling of so many passing generations. Were it not for that crack it would be worth six hundred dollars, whereas it is now worth only thirty. Follows a bargain, at the end of which the shopman, in order to open an account, and, as he explains, in order to secure the visitor's steady custom, lets it go for eighteen dollars. He probably paid $2.50, but his melancholy is not relieved by this knowledge. He appears to mourn rather than to exult in the frailties of human nature. The patient eventually returns to his native land, grievously hampered on the return journey by the fact that the precious piece travels swathed in his underclothes, and, if he be fortunate, dwells fondly on it for the rest of his life, interesting his family with a modest account of its purchase. in which his personal shrewdness and underlying artistic tastes are suggested rather than expressed.

Such are the small game on which the little dealers batten. Above them are the large dealers with finer shops, where great carved chests ten feet high cover the walls, and painted or lacquered screens sprawl across the rooms. Here everything costs much, much more, though there is a good deal of the same quality. The owner knows the value of suggesting an atmosphere A vase, which, placed among its fellows in a dirty little booth, looks the plebeian it is, gains greatly when it reposes on a carved stand on a broad shelf in a room where the eye is caught on entering by several large articles of beauty and undoubted value. The small dealer has said "a good piece" and over-praised it before he asked $10. The big dealer picks it up negligently and announces it to be a *hsiao wan'rh*—a little plaything—only thirty dollars. And in the shop, under the shadow of a screen from the Imperial Palace, it borrows beauty and looks indeed a lovely little plaything. Follows the inevitable feeling of regret.

Who does buy the fine porcelains? Firstly the wealthy Chinese, who love and appreciate them. Many Chinese, who, judged from their public careers, were intended by nature for absconding butchers, are genuinely interested in the most delicate trifles such as snuff bottles and jade ornaments. They will spend hours talking of them, while they are handed round by their guests, to be stroked on silk sleeves and praised with discriminating enthusiasm. They pay well, and are seldom swindled. They have, of course, to give a price that will yield the seller a handsome profit, but it is not worth the dealer's while to "stick" a good customer. No one will tell him openly that he has been stuck: but with the Chinese fine ear for irony he will soon grasp the damnation in the faint praise and delicately veiled criticism. That dealer has made his last profit from that customer.

The foreign professional dealers, buying either for some rich collector, or on their own accounts, are fair prey. Their visits are too spaced and uncertain for it to be worth while putting off till to-morrow the gain that can be made to-day For them the forger's best works are produced: for them the restorer plies his patient skill, and for them every artifice which tradition has handed down or which natural genius can suggest is brought into play. It is a fair fight, and, after all, it is not likely that the Devil will take the hindmost of the antagonists. The consumer always pays, and the piece will probably have travelled out of their hands before His Satanic Majesty presents his claim.

Besides the traditions of the trade, there are certain formulæ which have grown into a kind of ritual. The first is "I dare not lie." The second, in reply to an offer, "That is not as much as I gave for it." The third, when the deal is concluded "I have lost money." All are equally, that is to say completely, inaccurate. If the dealer intends to ask a particularly hair raising price, he usually prefaces his demand with the information that the piece is not his, but has been given him by a friend to sell. The friend is Mr. Jorkins, of the firm of Spenlow and Jorkins, and must bear the obloquy of the attempted robbery. When the dealer really wishes to make a deal, he will never admit that he is getting a fair profit. He will enumerate, as his reason for selling, a list of domestic or financial catastrophes that would soften a Probate Judge or the most hard grained profiteer. His highwater mark of truthfulness is attained when he admits that he has recovered the capital he invested Friendship, produced by a total acquaintance of about twenty minutes and a fixed resolution on both sides to do the other, is freely invoked. Or again, he is selling cheaply because he hopes to be introduced to the buyer's friends—ignoring the tacit assumption that he will do them with extra vigour to recompense himself for the profits he is foregoing, and relying on the sound maxim that there is always something a little pleasing in other people's misfortunes. The dealer likes to see guests arrive in a party. He has long learnt that when several people are assembled in one place a spirit of competition and a desire to impress are bred. It is very much easier to create a favourable selling atmosphere with three people than with one. All like to show their taste, their knowledge, their generosity, and their wealth.

All deals are done by bargaining. Visitors make their purchases in shops, or from the touts who hang about hotels, while residents who are known to be interested in curios are regularly visited by a shopman with an apprentice bearing some specimens wrapped up in blue cloths. The stability of the dealer can in some measure be tested by the amount of the reduction that he will make. Beware of large reductions. If the initial demand be for $100, and less than $70 be accepted, there is something wrong. The writer recollects seeing a dealer ask $100 for a large vase. The tourist contemptuously offered $5, which was immediately accepted, the real value of the thing being about $1.50. Only a scamp would do a trick like this, but no curio merchant has learnt that foreigners prefer fixed prices. Love of a bargain is imprinted in a Chinese heart, and by the time a Chinese baby is four years old he or she regularly chaffer for their sweets and toys. The writer said once to a dealer: "Why do you ask me such a high price? You know about what I shall give for that, so why do you waste time on the formality of asking too much and then gradually coming down?" The dealer replied seriously "I *must* ask too much! Sometimes I have got it." The only way of cutting this process short is for a regular buyer to make his first offer very near his last, so that the dealers can get accustomed to the idea that they will not profit much by a long struggle. Brusqueness will not avail, for the Chinese sticks to his customs, good or bad, like a winkle to his shell, and would rather not sell than sell in a way that his grandfather, great grandfather, and ancestors back to Yao and Shun had not practised.

Where do all these curios come from? Ah! The Palace. There can be no doubt that not only all the buildings within the Palace, but acres of cellarage, must have been closely packed with indifferent porcelain. The dealer knows that there still hangs an indefinable glamour about the idea of the Son of Heaven and his yellow tiled seclusion, where slender silk clad concubines languished in painted bowers, and where the less restrained were abstracted from existence by sinister eunuchs, while an invisible Lonely Man wore out a jaded existence among sumptuous surroundings. And, but vaguely conscious of these ideas, the purchaser pays a price augmented by the touch of romance, and feels that he must have gotten stolen goods cheap.

In reality the whole thing was different. Most of the concubines, as can be seen from their photographs, were so plain that they could never have been concubines at all had it not been for a houselaw that a certain number of eminently respectable young ladies must be chosen for this office every year from certain families: a law not too bitterly resented by parents in a country where dotless daughters are not easy to dispose of. The Son of Heaven was far too busy trying to adjust the interminable squabbles of his innumerable relations to have time to be blasé in a really romantic way. The rest of his time was spent in trying to curb the squeezing propensities of the eunuchs, a singularly loathsome race. He had little time to spare for Government or anything else.

The precious ornaments were all packed away, according to the Chinese custom, or else had been stolen by either the eunuchs, or the concubines, or the officials. And as for the splendour of the Palace Halls, we can safely affirm from our experience of many wealthy Chinese interiors, that unless it was a reception day, there was bamboo stretched across the throne with a sock drying on each end and a pair of trousers in the middle.

With all his faults, the curio dealer is often a pleasant fellow. After all, he must live, in a country where many millions die every year either of starvation or of diseases caused by malnutrition: and when he sells a piece the deluded globe trotter usually thinks that he is getting it for less than it is worth and so cannot complain when he finds that he was the spoiled instead of the spoiler. How this extraordinary illusion, that good things can be picked up easily, persists is remarkable; but it does persist, and seems likely to do so. It is still not uncommon to meet people who have had things of great value brought to them and sold to them for a song. The stories vary, but usually the piece is a stolen piece which would be recognized by the other dealers. The greedy hasten to compound a felony, and usually get what should be a practical lesson in the advantages of honesty. Bronzes, which are very difficult for the amateur to judge, are most commonly offered. Porcelain requires greater impudence on the part of the dealer, but if he has had dealings with the intended victim he knows to what extent he can impose on greed and ignorance. It need hardly be said. that were a fine piece stolen there would be no need to bring it to any European; there are many Chinese who would pay a high price for it and take the attendant risks, while if the Chinese nation were suddenly to be overcome with a wave of honesty there are still plenty of foreign experts who would pay 70 or 80 per cent. of the real value. The curio dealer cannot have a very high opinion of the morality of some foreigners. He sees them keenly anxious to get something for nothing, and not at all loath to become receivers of stolen goods. He must have an even lower opinion of their intelligence, for he daily encounters people who do not hesitate to state their opinions of wares the judgment of which requires a natural aptitude improved by many years of study.

The Chinese are an amiable people, and if treated with due regard to Chinese etiquette and with a respect for Chinese susceptibilities are pleasant companions and friends Anyone who really wishes to learn something of porcelain will find plenty of Chinese ready to assist him, and if he purchases steadily and does not mind paying a fair price for good pieces, he will soon be able to select a group of dealers whose honesty will at least be equal to that of the average foreign merchant. We are human: and blind confidence is seldom wise. Sipping tea with dealers is a pleasant way of speeding an hour, and if an occasional lapse from friendship should cause loss, against it must be spent the profit of hours spent in the contemplation of beautiful things.

How China Gets Her Salt

In last issue of the FAR EASTERN REVIEW we published a table showing the amount of revenue collected and accounted for under the reformed administration of the salt monopoly. In 1916 the total was $97,104,793, in 1917 it was $95,929,005 and in 1918 it was $92,918,465, the falling off in the two latter years being principally due to the unsettled state of the country and the annexation by certain south and south-western provinces of the salt revenues collected within their limits. With the establishment of a stable government and the reorganization of provincial affairs, salt promises to become one of China's greatest dependable sources of revenue, a fact which invests with some interest the existing methods of salt manufacture in China. In the July issue of the FAR EASTERN REVIEW we published an illustrated article on the chief salt wells in Szechuan, and below we give authoritative facts from Sir Richard Dane's report concerning all of the salt-producing centres:

In order effectively to administer the collection of salt revenues the country was divided up into districts, the most highly organized, from the revenue standpoint, being the Lianghuai Salt Administration, which was thus by far the most important salt administration in China.

Salt Production in Kiangsu Province

The Lianghuai Administration, at the time when the reorganization was undertaken, was conducted upon lines laid down by Marquis Tseng Kuo-fan in or about 1830, A.D., when he was Viceroy at Nanking. The Administration comprised the Provinces of Kiangsu, with the exception of the five Su Wu Shu prefectures (35 districts) which were included in Liangcheh: the Kiangnan area (Nanking and the adjacent districts): the greater part of the three provinces of Anhui, Kiangsi, Hunan: a great part, approximately one-half, of Hupeh, and the two Jukuang prefectures (14 districts) of Honan. The following districts and areas in Anhui, Kiangsi and Hunan were either not included in the Administration or were specially treated in the matter of taxation:—Two districts of Anhui which formed part of the Shantung Yinti area, and eight districts of Anhui and one prefecture (seven districts) of Kiangsi, which were included in the Liangcheh administration: 17 districts in Kiangsi which were supplied with salt from Kwangtung: a more or less undefined area in Hunan (the minimum of which may be taken to be the Chenchow and Kweiyang sub-prefectures and the districts of Yungminghsien and Taohsien), which was supplied with salt from Kwangtung, and the six Lichow districts in the north-west of the province in which both Huai salt and Szechuan salt were consumed. The half of the province of Hupeh, except the three districts referred to below, which was not included in the Administration, was and is supplied with Szechuan salt.

On Szechuan salt imported into Hupeh and Hunan additional duties were collected on arrival of the salt at Ichang and Shasi, and also at offices established for the purpose in the Lichow districts in Hunan, and likin duties were collected on Kwangtung and Szechuan salt entering Hunan, and on Kwangtung salt entering Kiangsi.

Three districts in Hupeh, Yingcheng, Tienmen and Chingshan are excluded from the Lianghuai Salt Administration. In the Yingcheng district, in an area of about 60 square miles, gypsum is excavated on a considerable scale. In the temporarily disused gypsum pits brine forms naturally or is formed artificially by pouring water into the pits, and salt is made by boiling this brine. The quantity of salt annually produced is estimated to be about 170,000 Ssu Ma piculs, and the consumption of this salt is permitted in the three named districts. The districts adjoin the Huai salt area on the north-east and south and the Szechuan salt area on the west. Some injury is said to be done to the Huai salt monopoly by the competition of this salt. A so-called black tax of 6,000 cash per month (about $4.14) is imposed on each pit capable of producing brine, and a red tax of 9,700 cash (about $6.69) is levied for one day's salt-boiling. An interesting feature of this small local administration is that the whole of the proceeds of the taxes are taken by the Hupeh Provincial Authorities and by the Yingcheng District Magistrate, and the Central Salt Administration receives nothing on account of Yingcheng salt.

Put briefly, in the Lianghuai Administration proper the province of Kiangsu supplied the salt, and the provinces of Anhui, Kiangsi, Hunan and Hupeh supplied the revenue.

The prinicpal (and indeed until recently the only) source from which the salt consumed in this area was obtained was the salt works on and near the coast of North Kiangsu in Huainan and Huaipei, that is, the area north and south of the Huai River, or in other words the old bed of the Huangho.

The Huainan works supplied nearly all the salt required for the four distant provinces, and also supplied the salt required for local consumption in the nine Kiangsu districts, which adjoin the works, and the salt required for local consumption in the Nanking and Yangchow cities and districts and the nine other adjacent districts: 20 districts in all.

The Huaipei salt works were, until recently, merely a subsidiary source of supply for South Anhui and the other Yangtze provinces, but the Yinti area locally supplied from the works was considerable, and included eleven districts in Kiangsu, nineteen in North Anhui and fourteen in the Jukuang prefectures in Honan. Transportation was usually effected by the inland waterways: by the Yenho Canal to Hsipa, and from there by the Grand Canal, viâ Yangchow to Shiherhwei.

In addition to the above 49,200 *yin*, a certain quantity of salt was transported from the works by sea to Shiherhwei to supplement the Huainan supply for the four provinces. The limit of such additional quantity was fixed in 1915 at 100,000 *yin* or 800,000 piculs. The quantity of salt allotted for transportation annually to the nine districts has also been stated in some official records to be 40,000 *yin*, but 49,200 appears to be the correct figure.

In Huaipei, in former years salt was produced at three groups of sea salt works along the coast known as the Linhsing, Taiping (Panpu) and Chungcheng works, and at factories established inland for the manufacture of salt from brine drawn from wells. In the western part of the Panpu and Linhsing areas there were a large number of these factories, in which salt of fair quality was produced from the condensation by solar heat of this subterranean brine. In the winter time the wells were ten to twelve feet deep: in the summer, when the works were in more active operation, the brine fell to a considerably lower level. The factories were scattered and were difficult of supervision, and a great part of the salt produced appears to have been smuggled.

In 1910 and 1911, about three years before the reorganization was undertaken, when the Huainan salt supplemented as above was found to be or was said to be insufficient, new works for the manufacture of salt by solar evaporation were opened by three Companies in the south-east corner of Huaipei under the name of Chinan. The experiment having been successful, other Companies commenced operations. All the Chinan salt produced is transported to Shiherhwei: the Companies are supposed to represent the Huainan Changshang merchants, and Chinan is, by a convenient fiction, treated as part of Huainan, which it immediately adjoins. Many of the shareholders in these Companies are influential, and the tendency of the administration is to favor Chinan as compared with Panchungling salt from the other works.

The configuration of the coast and the climate are favorable for the manufacture of salt by solar evaporation in Huaipei. There are, however, no good harbors along this part of the coast, and Chinan salt has to be taken out to sea in junks to a distance of forty or fifty *li* from the place on the river bank where the salt is first shipped, for transhipment into steamers for transportation to Shiherhwei. A charge of eight to 10 dollar cents for each bag of 105 catties is said to be made by the junk owners for transport from the works and loading at sea into the steamers. At Chingkou, near Haichow, steamers loading Linghsing salt can come somewhat nearer the shore, but there is necessarily a considerable waste of salt in transhipment and in transit. The transportation of salt by junk to Shiherhwei is possible, but much delay necessarily occurs, and much salt is lost or stolen in transit.

The Huainan works are divided into two subdivisions: T'ung and T'ai. The T'ung works are at Lussu, Yu-hsi, Yutung, Lipao, Chuehkiang, Pingchia, Chiaohsieh and Fengli, and the T'ai works are at Anfeng, Liangto, Tungtai, Hoto, Tingch'i, Hsiaohai, Fuan, Tsaoyen, Liuchuang, Wuyu, Hsinhsing and Miaowan. All the T'ung works are situated in the T'ungchow prefecture, and of the T'ai works the first eight mentioned are in the Yangchowfu prefecture, and the remaining three are in the Huaianfu prefecture. At these works salt is made by the lixiviation of saline earth by brine or fresh water, and the strong brine thus obtained is condensed by artificial heat until salt is precipitated. At Lussu salt is also made by solar evaporation by the Sungkiang and Chêkiang method, the brine being exposed to the sun in oblong wooden trays.

Salt made in this way, though it is cleaner in appearance, cannot compete with salt made from sea water by solar evaporation under favorable circumstances, and, if free competition is allowed, the works in Huainan will probably fall into disuse. The pressure of competition has been felt already, and the production of the T'ung works in particular has much fallen off in recent years. When, in 1898 and 1902, as a result of the Anglo-German Loan of 1898, inquiries were instituted by the Maritime Customs Department in regard to salt in Lianghuai, the production of salt in Huainan alone was reported to be considerably in excess of the requirements of the four Provinces.

From the Huainan Works salt is taken by the Changshang merchants, who control the manufacture, by canal and river to Shiherhwei on the Yangtze, where a large depôt exists for storage.

From the Huaipei Works Chinan salt is taken by sea to the Yangtze and then up the river to Shiherhwei, and some salt from the Panchungling works is also transported to Shiherhwei by this route. As before said also, a portion of the salt (49,200 *yin* of 440 catties each) required for consumption in the southern districts of North Anhui is transported from the works by the Yenho and the Grand Canal viâ Yangchow to Shiherhwei.

At Shiherhwei the salt is purchased by the Yungshang or transport merchants, and is transported by them at their own cost up the Yangtze to South Anhui, and to the provinces of Kiangsi, Hupeh, and Hunan.

Unique Salt Boiling Works in Chekiang Province

The Liangcheh Salt Administration was exceedingly complicated and also, it may be added, very inefficient. Liangcheh included the whole of the province of Chêkiang, the Su Wu Shu districts of the Kiangsu province, and eight districts of Anhui and one prefecture (seven districts) of Kiangsi. The inefficiency of the administration appears to have been due partly to the difficulty of establishing any effective control over the transportation of salt, as there are no natural trade routes offering special facilities for transportation, and partly also to the scattered nature of the salt works and the lawless character of the maritime population.

The principal salt works in the province are at Yuyao, on the southern shore of the Chientang estuary, and at Taishan, an island in the Chusan Archipelago. There are also salt works at Sungkiang on the coast of Kiangsu, south of the Huangpu river, and at various places along the whole coast of Chêkiang, from the border of Kiangsu in the north to the border of Fukien in the south, at which salt is made either by boiling or by solar evaporation. The damp climate of South Kiangsu and Chêkiang is, however, unfavorable for the manufacture of salt, and the volume of fresh water discharged by the Yangtze reduces the density of the sea brine. At nearly all the works in North Chêkiang at which salt is made by solar evaporation, the brine is therefore exposed for evaporation in wooden trays about 6 feet 8.5 inches long by 2 feet 9 inches wide, and this naturally increases the cost of the salt. At some works on the coast in the southern portion of the province brine is, however, exposed for evaporation in the usual manner. At places in the vicinity of Hangchow and the adjoining districts salt was, and still is, made by boiling brine transported from Yuyao, the density of which is artificially increased before transportation by infiltration of saline mud and sand. In the Shaohsiao districts also salt was extensively made at salt boiling works, to which brine of high density, obtained in the manner above described, was transported from Yuyao.

There were also salt boiling works of some importance at Huangwan, Hsutsun and other places on the sea coast near the Kiangsu border.

The salt made by boiling the transported brine is naturally very costly, as two transhipments of the brine are necessary, one in the Chientang estuary from large boats to smaller ones, and a second one from the small boats to vats in bullock carts, which take the brine to the furnaces.

The manner in which salt is boiled in these districts is exceedingly unique and ingenious. The cauldron is composed of plaited strips of bamboo, coated above and below, to a thickness of about 2/10 of an inch, with a mixture of lime made from shells from the Chientang estuary and furnace ashes soaked in brine. A large cauldron is 21 feet long and over 20 feet wide and 7 inches deep. The furnace is made of mud, and the cauldron is suspended above the furnace by hooks attached by 45 to 50 straw cords to a wooden frame-work, constructed for the purpose above the furnace. Two beams about 26 feet long and one foot three inches in diameter, supported by mud or masonry pillars at the ends, flank the cauldron, and on these beams 12 to 16 wooden poles are placed transversely at regular intervals across the cauldron, to which the cords and hooks, by which the cauldron is supported, are attached. The lime and ash coating on the cauldron is able to stand the heat for a period of 10 days and 11 nights, and brine is continuously boiled for this period, salt being extracted from time to time, as it is precipitated on the floor of the pan. At the end of the 10 days and 11 nights the cauldron is destroyed in the presence of the officer in charge, and the remnants are, it is said, sold to farmers as manure at a price equal to the original cost of its construction. This, however, is said to be $10 only.

The Salt of Fukien Province

In Fukien, except in the Tingchowfu prefecture which was supplied with salt by the Han river running into the sea near Swatow in Kwangtung, a monopoly of the purchase, transportation and sale of salt on behalf of the Government was established after the Revolution of 1911.

From Foochow to the Chekiang border there were salt works in 1913 at one place only, and these works, which were unimportant, have since been closed. But from the Haitan Straits to the border of Kwangtung the configuration of the coast and also the climate are favorable for the manufacture of salt, and large quantities of salt are made by solar evaporation, in open pans and without processes for raising the density of the sea water before evaporation. The salt made at these works is much more than sufficient for the requirements of the Fukien province, and salt is exported in large quantities to Chekiang in the North and to Swatow and Canton in the South. Fukien is in fact an important salt-producing province.

The provinces ot Kwangtung and Kwangsi, in the time of the Ching dynasty, were divided for purposes of the salt administration into seven divisions: the Central Kuei, which comprised the central portion of Kwangtung, the Northern Kuei, which comprised the northern districts of Kwangtung and some districts in Hunan and Kiangsi, the Western Kuei, which comprised the province of Kwangsi and a few districts in Kweichow; the Eastern Kuei, which comprised the eastern districts of Kwangtung and the adjacent districts in Kiangsi: the Southern or Nankuei, which comprised the southern districts of Kwangtung: the Pingkuei, which included the extreme western districts of Kwangtung and some districts in Kwangsi, and the Chaochiao area (Swatow and the districts inland to the West), which comprised the districts in the extreme east of Kwangtung and some districts in Fukien and Kiangsi.

The Solar Evaporation Works of Changlu

The Changlu administration includes the whole of the Chihli province and 61 districts in Honan. Of the remaining districts in Honan, 34 were under the Hotung administration, and the 14 districts in the Jukuang prefectures in South Honan were included in the Lianghuai administrative area and were supplied with salt from Huaipei.

The Changlu Yinti proper, however, only included 120 of the 157 districts in the Chihli province. The seven districts in the Yungpingfu prefecture, adjoining the Fengtien province of Manchuria, formed a separate administration in which salt was transported and sold by Government agency, and the revenue from which was received by the Viceroy of Chihli.

The salt revenue of the 14 districts of Jehol also, which were supplied with salt partly from Mongolia and partly from the Fengtien salt works and from the Shihpei salt works in the Yungping districts, had also been separately administered.

The 13 Kowpei districts adjoining Chahar (Kalgan and Dolonor) were also not included in the Yinti, though the administration of the revenue in the period immediately preceding the reorganization was under the control of the Changlu Salt Commissioner.

The Changlu Yinti area was supplied with salt from the Fengtsai works at Tangku and Tengku on both banks of the Pei-ho (ho meaning river) and the Lutai works near Hanku on the left bank of the Peitang river. Limited quantities of salt for some of the Yin districts were also obtained from the Yotchi works to the north of Hanku, and from the Yencheng and Haifeng works near the Shantung border.

The Lutai works are in one group, but the works at Tangku and Tengku in the Fengtsai section form separate groups and are at some distance from each other. The Lutai works can produce about 3,000,000 piculs of salt in a good year, and the outturn in this area can, if necessary, be largely increased by the construction of additional works. The two Fengtsai groups, Tangku and Tengku, are also capable of producing 3,000,000 piculs of salt in a good season. Both localities, which are large mud flats commanded by the tides, are very favorable for salt manufacture. The levels permit of brine being brought from the sea to the works by flow at Spring tides in canals or channels dug for the purpose. Salt from the works can be transported easily and cheaply to the depôts in boats on transport canals which have been dug, like the brine canals, through the mud flats, and which are filled either from the sea or by flow from the Pei-ho and Peitang rivers. When the brine and transport canals are full, temporary dams prevent any over supply, and keep the water in the canals at the required level. The brine is raised from the brine canals into the reservoirs and evaporation pans by an ingenious system of lifts operated by windsails: and the salt workers know their business, the bitterns from the crystalizing pans being fully utilized. Expert advice may help to remove defects in the salt, but, if sanitation and cleanliness are attended to, and if the monopoly of purchase, which now exists, can be abolished, and the salt makers are paid for the salt produced according to its quality, it is certain that salt of very good quality and appearance can be manufactured at these works at an extraordinarily small cost.

Salt from Lakes in Shansi

The Hotung Yinti comprised 51 districts in South Shansi, 34 districts in Honan, and 35 districts in the Shensi province. The 60 districts in the north of the Shansi province, which mainly consume earthsalt locally manufactured, and the 55 districts of Shensi, which are supplied with salt from Szechuan in the south and from Mongolia and the Huamachih and other lakes in the north, were not included in the Yinti. In the Yinti area all licit salt is made on the shores of a salt lake, which in a normal season is about four miles long and a mile wide, and is situated between the town of Yuncheng and the northern slopes of the Chungtiao hills, which are about four miles from the town. The lake is fed by the drainage from the hills. Under the bed of the salt lake, at a depth of about 50 feet from the surface, there appears to be a layer of rock salt, and in circular pits or wells, driven down to this depth, the water becomes impregnated with salt. The brine is lifted from the pits by gangs of laborers, working in tiers, who pass the brine from one tier to another until it reaches the surface. From the wells, which are few in number, the brine is raised by baskets and ropes worked by hand. On reaching the surface the brine is run into evaporating pans, and is there condensed by solar evaporation until salt is formed, in the same manner as sea-salt. At the close of the manufacturing season, the salt, which has been manufactured, is transported to the edge of the lake, and is there stored on raised platforms near the manufacturers' houses.

To prevent the drainage from the hills flooding the salt lake a series of embankments has been constructed at the eastern end of the lake, the principal of which is known as the Shihmatao and serves as a road of approach to the town. A sweet water lake has in this way been formed to the east of these embankments.

From the lake shore the salt is transported in carts drawn by mules to merchants' store-houses mainly in the town of Anihsien, and is there stored in bulk until arrangements are made for its transportation to the districts of consumption. A little salt is also stored in Yungcheng and Hsiehchow, but Anihsien is the principal depository. For transportation from the lake shore the salt is now packed in bags made of goats and cows' hair, which contain one picul each, and 20 bags are loaded in a cart.

At Anihsien the salt is repacked in stronger and heavier bags, of varying capacity and weight in accordance with the district for which the salt is destined, and transportation is effected principally by pack mules. Carts are, however, used to some extent, and, since the withdrawal of official interference with the transportation, wheelbarrows have also come into use.

In the time, as is said, of the Sung dynasty a wall was constructed round the salt lake, and in this wall there are three imposing gates, through which salt was supposed to be transported, and at which official control, so far as such control was considered possible or necessary, was exercised over the transportation of salt and the collection of the prescribed duties.

Shantung Coast Production System

The Shantung Salt Administration comprises the whole of Shantung province (107 districts), nine districts in Honan, five in Kiangsu, and two in Anhui, and the quantity of salt allotted for consumption, under the Ching dynasty, in this large area, with a population estimated at 35 millions, was 2,125,325 piculs only. If this estimate of the population is even approximately correct, either Mr. Chang Chien was extraordinarily wrong in his estimate of the quantity of salt annually consumed in China (12 catties per head) or the allotment was wholly inadequate for the needs of the population.

Except at a few places, where the coast line is unfavorable, salt is produced by solar evaporation along the entire Shantung coast, the works, from which 90 per cent. of the Shantung salt revenue is derived, being those of Wangkang and Kwantai at the mouth of the Hsiaochingho, a small river, flowing eastward from Tsinanfu to the sea, which forms a convenient water-transportation route for the manufactured salt Salt thus transported from Wangkang and Kwantai, was stored in a depôt at Huangtaichiao on the bank of the Hsiaoching-ho, three miles from Tsinanfu, and from the depôt it was distributed to the districts of consumption. At present the bulk of the salt transported from Huangtaichiao is carried by the Tientsin-Pukow Railway.

The Yungli works near the Chihli border supply a small group of 12 districts, and the Taolo works near the Kiangsu border were supposed to supply another group of six districts which principally consumed illicit salt coming both from Shantung and Kiangsu.

There are also numerous salt works in the Shantung Promontory, where salt was, and is, extensively manufactured.

Salt Wells and Mines in Yunnan

The salt revenue administration in Yunnan was in many respects the most simple and practical of all the systems of administration in force in China. Salt in Yunnan is produced at a number of so-called brine wells, which are situated at different places throughout the province, forming roughly three groups, the Heiching group about 85 miles to the west of

Yunnanfu, the Peiching group with its centre at Peiyen near Talifu, and the Moheiching group in the south-west with its centre at Mohei, about 50 miles north of Szemao. The majority of the wells may more properly be described as shafts, which are driven laterally in a zigzag direction into hills containing a coarse rock salt, so as to tap any natural springs there may be in the hill, the water from which by percolation has become impregnated with salt. Through these shafts the brine is pumped out of the hill by workmen, sitting one in front of the other in the shafts, and pumping the brine from one to the other through hollow bamboo pipes by sticks with small leather buckets attached. There are also in places salt wells dug in level ground, which sometimes reach considerable depths. From these the brine is raised to the surface, in leather bags by capstans and ropes which are worked by hand by the laborers. The bags are capacious, and hold from 150 to 300 catties of brine.

At some places, notably at Yuanyunching, in Heiching, at Lachi, and Chiaohou in Peiching, and at Mohei, Shihkao, Anpan, Hsiangyen, Mongyi and Yihsiang in Moheiching, the coarse rock salt is mined and brought to the surface by carriers. The brine and rock salt thus obtained are distributed, under official supervision, to the salt-boiling establishments or factories. The rock salt, which contains a large admixture of earth, is dissolved in the brine obtained from the wells, so as to raise its density, before it is boiled for the production of salt. The mining and brine-pumping operations are conducted under official supervision, and the management of the mines is entrusted to the Salt Works Officers appointed by the Government, but the salt is boiled by private enterprise.

The salt is boiled and pressed to solidity in iron cauldrons, and at the Heiching and the Moheiching wells the solid cakes thus made, which usually range in size from 150 catties to 200 catties, are sawn in pieces for transportation. At the wells in the Peiching group, except Lachi and Lichiangching, cylindrical cakes, weighing from a minimum of one catty at Yunglungching (ma-ti-yen or horse shoe salt) to a maximum of 12 catties at Peiyenching and Chiaohouching, are manufactured, and Yunlung and Chiaohouching salt, intended for transportation and sale on the border of Burma, is made into cakes of five catties.

A chemical analysis made shows that the salt is of good quality, though it is said in Yunnan to cause goitre. Probably the water of the province, and not the salt, is responsible for this.
one for each group of wells, and the salt from one group entering

The province was divided into three areas of consumption, the area of consumption of another group was treated as illicit.

The salt is transported by ponies and mules and also by porters. Carrier traders transport salt from place to place on pack ponies or mules, and return with loads of other merchandise. A man carries practically the same load as a pony, though naturally he moves more slowly. At the Heiching wells the large solid cakes of salt are usually sawn into two pieces when they are carried by men, and into four pieces when they are to be carried by ponies, two pieces constituting a pony load, and one piece a man's load. At Moheiching the salt cakes are not sawn, but are broken with the hammer into several irregular pieces. The largest pieces, after weighment, are attached by leather straps to the wooden pack-saddles which are in general use for animal transport, while the smaller fragments are put into baskets to be carried by men and women. In Peiching the cylindrical cakes are packed with straw into baskets for transportation in numbers varying from 8 to 12 according to the strength of the ponies.

The Wells of Szechuan

The Szechuan Salt Administration under the Ching dynasty was second to Lianghuai in order of importance. The Administration comprised the whole of the province of Szechuan, practically the whole of the province of Kweichow, though some Kwangtung salt was consumed in the prefectures of Liping and Kuchow and a little Yunnan salt was used in the area immediately adjoining that province, the prefectures of Chaotung and Tungchuan and the district of Chenhsiungchow in Yunnan, and about half of the province of Hupeh. In the eight districts of Shihnan, Haofeng, etc., which are known as the Chupachi, and in the four districts of Tzukuei, Hsingshan, Patung and Changyang, in the west of Hupeh, Szechuan salt was exclusively consumed: and in five prefectures in the centre of the province, Anlu, Hsiangyang, Yunyang, Chingchow and Ichang and the sub-prefecture of Chingmenchow, Szechuan and Huai salt were both used.

The financial importance of the administration was due to the facilities, which were afforded by the Yangtze and the Min rivers, for the transportation of salt to a great part of the consumption area. Salt is extensively manufactured in Szechuan from brine wells, which exist in large numbers in a tract somewhat rectangular in shape, extending from the northern limit of the province adjoining Shensi to the Yangtze river at Luchow on the east and to the Min river at Chienwei on the west. There are also salt wells of considerable importance at Yunyang on the Yangtze and at Taning on the Pingchi, a tributary of the Yangtze between Wanhsien and Kweichowfu, and at Fengchieh near the western end of the gorges, and also at Yenyuan in the south-west of the province. There are also wells at Yuchang, or Pengshui, south of the Yangtze in Szechuan, and at Yenchingtu in the Chaotung prefecture and at Wongchiaping on the Yangtze, in the Tungchuan prefecture near the border of the independent Lolo country in Yunnan. Broadly speaking, however, the salt lies north of the Yangtze. At Fengchieh salt is evidently very near the surface. In the winter time, when the river is low, brine is obtained by sinking wells less than 30 feet deep on both banks of the river. In the summer time when the river is high, the saline tract is covered.

The number of salt wells in the province is not less than 113,000, and is probably more, as it is doubtful if the enumeration which has been effected is reliable. The Tzeliuching Salt District, on a tributary of the Nia Chiang, or Luchow river, about 90 miles from its junction with the Yangtze at Luchow, and the Chienchang and Lochang Districts on the Min river far surpass all the other districts in importance. The importance of these works is due mainly to their situation, which permits of the manufactured salt being transported by water to the districts of consumption, but, in the case of Tzeliuching, the presence in the wells of gas and the business enterprise of the people have helped materially to build up the interesting and important industry for which the place is celebrated. Most of the brine obtained is boiled conveniently and inexpensively with the aid of the gas, and the industry and ingenuity of the salt makers and merchants have done the rest.

The brine at Tzeliuching is very rich, but this cannot have been known to the first well-sinkers, as the wells have to be driven to an enormous depth before brine is obtained, and are, moreover, driven to a considerable distance through sandstone rock. The rock is soft, but the labor of well-sinking with the apparatus used is enormous. It may be. therefore, that the discovery of the gas led to well-sinking at Tzeliuching, but tradition does not support this surmise. Salt wells are said to have been worked at Tzeliuching since 250 A.D., and the discovery of the gas is said to be of much later date.

"China in 1918," the title of an excellent series of articles, edited by Mr. T. Z. Tyau, LL.D., the enterprising editor of the "Peking Leader," has now been reprinted in Shanghai, the first edition having rapidly been sold out. The new edition is well got up, is improved typographically over the first edition, and is on better paper. The articles cover a great variety of subjects, all containing information of first class order to those interested in China, and should be in the hands of all students as well as all financial or commercial men. The price is one dollar silver per copy, and the purchaser gets considerably more than value for the money.

Americans in Shanghai may now be admitted as students in the Chinese Language School maintained by the British Chamber of Commerce of Shanghai. Previously the school has been open to British subjects exclusively, but recently the American Chamber of Commerce accepted the invitation of the British Chamber of Commerce and it is expected that there will be a ready response on the part of American young men who will wish to take advantage of the opportunity.

The Through Traffic Arrangements of the Chinese Government Railways

The early history of the different lines which make up the system of the Chinese Government Railways was characterized by independence of action. The construction cost of most of the lines was paid for by means of funds loaned from foreign financial syndicates and the terms of the loan agreements made with these bodies were not by any means uniform. In addition to lines constructed under loan agreements there are three concession lines, the South Manchuria, Kiaochow-Tsinan and Yunnan Railways. These are of a political nature and the concessions for them were granted more or less as the result of diplomatic pressure. The diversity of the conditions under which construction was undertaken may therefore be imagined.

This diversity did not tend to the control under a central authority with the result that in the early days the different lines were practically a law unto themselves. Each line had its own particular policy in regard to rates, etc., which it carried out without much regard to what was done on sister lines and thus intercommunication, was at a discount. It is only of recent years that the idea of a national system of railways under the control of a central authority has come into being and the policy of the Government directed towards its realization.

The purpose of this article is not, however, to discuss either loan agreements or the railway policy of the Chinese Government but to trace the development of the through traffic arrangements which have been built up of recent years. The remarks above have only been made to show that conditions were not favorable in the early days to the development of intercommunication between the different lines. In fact down to April 1, 1914, the only arrangements made in that direction were between the three northern railways, the Peking-Hankow, Peking-Suiyuan and Peking-Mukden lines, for through booking of passengers and certain kinds of goods between certain stations on these lines. Even this limited arrangement was only come to after considerable difficulty due to the different systems of rates in force on each of the lines mentioned.

The year 1913 may be regarded as the time when the Chinese Government Railways began to realize the advantages of intercommunication, not only between themselves but with railways in foreign countries as well. In April of that year a Conference was held in Tokyo at which the representatives of the Peking-Mukden Line met those from the South Manchuria, Chosen and Imperial Japanese Government Railways and laid the foundation of the through passenger traffic over the railways mentioned. After the conclusion of this Conference a meeting was arranged between the representatives of the Peking-Mukden, South Manchuria and Chinese Eastern Railways which resulted in a through passenger traffic being inaugurated over these railways also.

In the summer of the same year the Peking-Mukden Line sent its representatives to the Trans-Siberian International Through Traffic Conference held at Moscow and as a result was admitted to participation in the Trans-Siberian through traffic arrangements.

The Peking-Mukden Line by reason of its geographical position links up the Chinese Government Railways system with the railway systems of other countries and on account of this was selected by the Ministry of Communications to undertake the pioneer work in opening up relations with these systems.

In October, 1913, the Ministry of Communications called a meeting in Tientsin of representatives from the Peking-Hankow, Peking-Suiyuan, Peking-Mukden, Tientsin-Pukow and Shanghai-Nanking Lines to devise arrangements for domestic through traffic. The result of this meeting was the inauguration of through booking arrangements for passengers, baggage and parcels over the lines mentioned.

The arrangements come to in the year 1913 have been improved and extended at the yearly conferences held since and the growth of through traffic work in the interval led the Ministry of Communications to establish, in September, 1918, an organization known as the Railway Through Traffic Administration to take charge of through traffic matters.

This Administration has its offices in the Ministry itself and its duties are administrative only, all executive power being retained by the Ministry.

Prior to the organization of the Railway Through Traffic Administration the administrative work in connection with through traffic was conducted by the Peking-Mukden Line acting under the direction of the Ministry.

The Railway Through Traffic Administration on its inauguration relieved the Peking-Mukden Line of this responsibility and all the archives in connection with the work were transferred from that line to the new organization in September, 1918.

The Administration is organized in four divisions. The General Affairs Division has amongst its duties the control of the staff, translation work, custody of documents agreements and contracts and preparation of advertisements, guide books and other publicity matters.

The Domestic Through Traffic Division deals with all matters relating to the through traffic between the different Chinese lines.

The International Through Traffic Division has control of all matters relating to through traffic between the Chinese Government Railways and railways in foreign countries and steamship companies.

The Railway Clearing House Division has charge of the clearing of through traffic accounts and the division of the receipts in so far as they concern the Chinese Government Railways.

At the present time it also has control of the accounts and division of the receipts from the China-Japan Through Passenger Traffic amongst all the railways concerned in that traffic, a duty which is taken in turn for periods of five years by the Chinese Railways and the Imperial Japanese Government Railways Its other duties include the preparation of through fares and rates, statistical statements and other accounts work generally

The chief of the Railway Department of the Ministry of Communications is the Director of the Administration and is responsible to the Ministry for its work.

In view of the growth of through traffic and the continual extension of the arrangements therefor this Administration seems destined to play a very important part in the railway life of China.

It may here be remarked that annual Conferences of the Railways are held to deal with through traffic matters and the arrangements now existing are the result of the deliberations of these Conferences. Their resolutions are submitted to the Ministry of Communications, which, of course, retains the right of veto in regard to them, and they become operative on the issue of its necessary order of approval.

The difficulties which arise at these conferences due to the different methods of operation, tariffs, etc., in force on the different lines are numerous but they have invariably been overcome through the keen desire for uniformity which has been manifested by the delegates. In fact it would not be too much to say that the success of these conferences is having a profound effect in fostering a desire for unification all round which is now beginning to make itself felt in railway circles generally and which is bound to be translated into action with beneficial results in the not distant future.

It seems desirable at this stage to describe at some length the through traffic arrangements as they now exist and to trace their growth from the beginning up to the present time.

China-Japan Through Passenger Traffic

As already remarked this traffic was inaugurated as the result of a conference of representatives from the Peking Mukden, South Manchuria, Chosen and Imperial Japanese Government Railways which was held at Tokyo in April, 1913.

The conference made arrangements for the sale of through single tickets and through registration of baggage between the most important stations on the railways mentioned which were brought into operation from October 1, 1913. The success of these arrangements was so quickly evident that at the next conference they were extended to include the important stations on the Peking-Hankow, Peking-Suiyuan, Tientsin-Pukow and Shanghai-Nanking Lines as well. The Shanghai-Hangchow-Ningpo Line was admitted to participation later

It soon became evident that further facilities were required and the arrangements were extended to permit of return tickets being sold. Reduced fares for parties making return or circular trips wholly or partly over the lines of the railways interested were also agreed to.

In order to facilitate business between China and Japan arrangements have been made for the through booking of parcels. These arrangements include the collect on delivery system as well as the ordinary conveyance of parcels.

The difficulties attendant to Customs examination of baggage and parcels booked through have been got over by the South Manchuria Railway undertaking to pass such through the Customs at Antung. Those desiring to take advantage of this facility are required, when booking baggage or parcels, to make out a declaration containing the necessary information for the Customs authorities, forms for which purpose are obtainable at the stations. The South Manchuria Railway, when such information is furnished, attends to the Customs formalities and advances any duty levied.

Money so advanced is recovered from the owners when the baggage or parcels are delivered at the destination station.

At the third annual conference held in Peking in April, 1915, the advisability of entering into relations with steamship companies operating between China and Japan was discussed and as the result of this agreements were made with certain steamship lines for the sale of circular tour tickets at reduced rates covering combined rail and steamer routes. Such tickets are now sold covering the circle starting from Peking, travelling viâ Mukden and Chosen to Japan, thence to Shanghai by steamer, and completing the journey to Peking, either viâ the Yangtze and Hankow or by way of Pukow and Tientsin.

Tickets are, of course, also obtainable for the circle mentioned available in the reverse direction and are on sale at all the principal stations on the interested railways.

At the same conference it was also decided to enter into arrangements with the steamship lines operating on the Pacific for the sale of overland tour tickets at reduced rates between Japan and China so as to offer travel facilities to visitors to the East, many of whom, after visiting Japan, continued their trip to Shanghai by steamer thus missing the interesting sights to be seen in Chosen and North China. The steamship lines received favorably the proposals made and these overland tour tickets covering the routes from Yokohama to Hankow or Shanghai and *vice versâ*, are now sold by them to holders of their ocean steamer tickets who desire to include Chosen and North China in their itinerary.

Tickets for the route between Yokohama and Shanghai include coupons for the side trip from Tientsin to Peking.

At the seventh annual conference held in Peking in April of this year draft proposals were agreed to for the sale of single tickets between China and Japan, viâ Shanghai, and also for an extension of the circular tour arrangements to include the Shanghai-Dairen steamer line of the South Manchuria Railway. It is expected that full arrangements for these facilities will soon be completed and the tickets placed on sale.

A more ambitious programme was provisionally agreed on at a special conference held in Tokyo in April, 1918, at which, in addition to the railways, the Pacific steamer lines were represented. Draft arrangements were then drawn up for the sale of through single tickets between China and the ports on the Pacific coast of America, also for an extension of the circular tour arrangements to cover the Pacific routes and to include Manila as well. The effect of the war on Pacific shipping facilities has, however, unfortunately prevented the realization of the programme up to the present time but it is hoped that conditions will soon be favorable for the inauguration of the arrangements.

Through Traffic with Chinese Eastern Railway

The arrangements for this through traffic come to at the Conference held in Tokyo in April, 1913, were brought into force on January 1, 1914, when through tickets were placed on sale between Peking and Tientsin and Harbin

Shanhaikuan was later added to the list of stations. This traffic continued in operation until November 30, 1917, when the effect of the war on the Chinese Eastern Railway arrangements made it necessary to suspend it. It has not up to the present been resumed.

Trans-Siberian International Through Traffic

As a result of the admission of the Peking-Mukden Line to participation in this traffic at the conference held in Moscow in inauguration of the sale of through single tickets, registration and arrangements made for through registration of baggage from Peking and Tientsin to Berlin, Paris, and London from June 1, 1914. The traffic had thus only been inaugurated two months when the outbreak of war made it necessary to discontinue it.

Chinese Government Railways Domestic Through Traffic

The result of the conference of the different lines already referred to as held in Tientsin in October, 1913, was the inauguration of the sale of through single tickets, registration and insurance of baggage and booking and insurance of parcels between the principal stations of the Peking-Hankow, Peking-Suiyuan, Peking-Mukden, Tientsin-Pukow and Shanghai-Nanking Lines from April 1, 1914. The Shanghai-Hangchow-Ningpo Line came into the arrangements later.

The through traffic is at present confined to the lines mentioned, but the arrangements have been extended and perfected at subsequent conferences and now include the sale of return tourist tickets at reduced fares to places of interest, circular tour tickets covering the route Peking-Hankow-Shanghai-Nanking-Tientsin-Peking, and the introduction of the C.O.D. system for parcels booked through.

The clearing of the accounts and division of the receipts from this traffic, as has already been remarked, forms part of the duties of the Railway Clearing House Division of the Railway Through Traffic Administration. The stations on the different lines submit their returns of through traffic to the Railway clearing house through their accounts offices and the Railway clearing house conducts the full audit of these returns thus relieving the different accounts offices of a considerable amount of work. This method also leads to a saving of expense as the audit of these returns and division of the receipts can be done much more economically in a central office than by each railway acting independently. The Railway clearing house furnishes monthly to each line abstract statements of its shares of through traffic ready for inclusion in its accounts. The railways have the right to appoint an auditor to check the work of the Railway clearing house at any time.

It is expected that the control of exchange of rolling stock between the different lines will soon be centralised in the Through Traffic Administration with beneficial results.

Many other steps have also been taken with the view of unifying methods on the different lines participating in the through traffic arrangements.

The fruits of these are not yet evident in working but the results of the progress already made will appear in course of time. This article would not be complete without some reference to what the future holds in regard to the through traffic arrangements of the Chinese Government Railways. A recapitulation of the past has been given in which it has been made evident that the great world war has circumscribed activities in regard to the relations of the Chinese lines with the systems of other countries.

The war being now happily over it is expected that as conditions become stabilised activities suspended on its account will be resumed.

The situation in regard to trans-Pacific relations has already been dealt with. In addition to the early inauguration of the through traffic with the Pacific coast of America it is confidently hoped that in the not very distant future the traveller to New York, Chicago and other American cities will be able to go to Peking station and buy his ticket right through to his destination. He will hand in his baggage, get his receipt for it and receive it again at the conclusion of his journey.

The opening of the trans-Siberian route will be the signal for the resumption of activities in regard to the international through traffic to Europe. The pre-war arrangements made by the Chinese Railways only touched the fringe of this traffic; new arrangements will be much more extensive and varied.

In regard to through booking arrangements to towns in Russia and Siberia, negotiations for these facilities had reached a favorable conclusion at the outbreak of war. This event, of course, made it impossible to proceed further but the question will again come to the front when the Trans-Siberian Railway resumes operations.

With reference to domestic intercommunication that has to the present been confined to passenger traffic, but, as has been pointed out, unification of methods has been proceeding in the meantime. This will in the near future make possible arrangements for goods traffic as well and gradually lead to the Chinese lines working together as one system with uniformity of arrangements. Much has been done in the past few years towards this result, much yet remains to be done, but the experience of the past in surmounting difficulties makes the future outlook bright and promising.

Japanese Claim More "Compensation" from China

Exclusive Interests in Manchuria and Mongolia Demanded by Militarists

It is too early yet to know what is going to be the final attitude of any Power to the proposed reorganization of the Consortium, but an interim comment on Japan's position has been made in two Reuter's telegrams from Tokyo, with originating dates of August 14 and 15 respectively, published in Peking on August 15 and 16. The earlier of these two messages says opinion in Tokyo was divided as to what Japan's attitude on the matter would be, Viscount Uchida, the Foreign Minister, and his supporters standing for joining the Consortium without any reservation in consonance with the British example, and not fearing the loss of any rights in Manchuria and Mongolia and even going to the extent of not making reservations thereanent. The other side, "strongly supported by the militarists" says the telegram, contended that Japan had already made sacrifices in arresting the Russian aggression, and "the rights thus secured" deserved international recognition. Consequently it was "only right and proper that they be secured by a clause thereanent in the new Consortium which as it stands carries a tendency to deprive China of her financial independence by ultimately placing her finances under the control of the Powers composing the Consortium. Japan can never be a party to anything tending to curtail China's absolute independence or invite international complications endangering the peace of the Far East." The same telegram told us that the Special Diplomatic Commission had sat in consideration of the matter and had reached no decision, but another session would soon be held, and "indications pointed to a decision unfavorable to the supporters of Viscount Uchida." Within twenty-four hours comes the second telegram stating that, "A Cabinet meeting yesterday (August 14, the second anniversary of China's entry into the War) decided, in view of Japan's special rights and interests, to demand the exception of Manchuria and Mongolia from the purview of the financial Consortium. It is believed that the Japanese embassies at Washington and London have been instructed to this effect." It is thus seen that the militarists have secured their own way. There are many points from which this decision might be viewed. It might be considered from the point of view of its indication of militarist supremacy in Japan even over what is supposed to be a democratic Cabinet. It might be viewed as a left-handed Japanese contribution to the maintenance of the peace of the Far East; and so on. Here, and at this juncture, we shall concern ourselves with three points: The fact that the decision taken seems to depend on certain unknown rights and privileges; the historical background of the decision; and the essential implication of the decision.

It will be noticed that the earlier message, obviously well informed, for its two predictions were fulfilled within twenty-four hours, speaks of the militarist contention that Japan had already made sacrifices in arresting the Russian aggression, which menaced the peace of the Far East, and argued that "consequently it is only right and proper" that "the rights thus secured" deserve "international recognition." These phrases suggest, indeed almost imply, that in return for the assistance given to Kolchack, Semenoff, and others, the Japanese have secured certain rights which at present are not internationally recognized. This has been rumored for a long time, but this is the first explicit reference to the matter, as far as we are aware, if our interpretation be correct—and we see no other interpretation to be placed on the phrase used. It would seem that before the Powers proceed any further in this matter they should demand from Japan exactly what rights she has secured by "making sacrifices in arresting the Russian aggression." If they are rights in Russian Siberia, then they have no weight as applied to a Consortium for China, and are of no interest to anybody except Russia. The world has a right to know just what rights Japan believes herself to have.

The second point of our immediate reference is the historical background of the decision, and the question how far the strokes that Japan is now adding to the picture harmonize or clash with the background, are in consonance or in conflict with it. The elements of consonance may be taken first. Assuming for the sake of argument that Japan has in some way or other acquired special rights in Manchuria and Mongolia, there are four precedents with which a Japanese exclusive policy would be in accord. The first dates back to the era of the scramble for concessions, and takes the form of an exchange of notes between Great Britain and Russia at St. Petersburg on April 28, 1899, whereby Great Britain and Russia, animated by a sincere desire to avoid in China all cause of conflict on questions where their interests meet, and taking into consideration the economic and geographical gravitation of certain parts of the Chinese Empire, agreed as follows:—

(1) Great Britain engages not to seek for her own account or on behalf of British subjects or others, any railway concessions to the north of the Great Wall of China, and not to obstruct, directly or indirectly, applications for railway concessions in that region supported by the Russian Government.

(2) Russia on her part engages not to seek on her own account, or on behalf of Russian subjects or others, any railway concessions in the basin of the Yangtze, and not to obstruct, directly or indirectly, applications for railway concessions in that region supported by the British Government.

Twice was this agreement thrust in the face of the British authorities by the Japanese Government after they had succeeded to the Russian legacy in Manchuria, the Japanese evidently regarding themselves not only as direct heirs of Russia but also as residuary legatees, enjoying the benefit of the incidental arrangements that Russia had made for her own convenience in Manchuria. The first occasion was with reference to the Hsinmintun-Fakumen Railway, and the second with reference to the Chinchow-Aigun Railway.

The second precedent is the answer to Mr. Knox's proposal to internationalise the Manchurian railways in 1909-1910. This proposal affected both the Russian and the Japanese "spheres of interest" in Manchuria, and so the two Powers stood together in opposition to the scheme, Russia, it is believed, at the instigation of Japan, quoting the 1899 Agreement set out above, and Japan indirectly referring to it.

The third precedent is much more recent. In 1916 the Chinese Government signed with the Siems-Carey Railway and Canal Company a contract for building, among others, a line from Fengchen, the present terminus of the Peking-Kalgan-Suiyuan Railway, and to Lanchow in Kansu; but the contract was set aside on protest of the Russian authorities, who were able to quote the Russo-Mongolia Railway agreement of September 30, 1914, which gives Russia a very strong hold on railway building in Mongolia, in support of their protests. If, but only if, Japan has by some understanding of which the world at large is ignorant entered into the enjoyment of what have hitherto been Russia's exceptional privileges in Mongolia, Japan can quote the Russo-Mongolian Railway Agreement, and the Chinese Government's recognition of its validity, as supporting her claim to the exclusion of Mongolia from the operations of the Consortium, for there is nothing whatever to support such a claim in the 1915 Treaties with China.

Apart from the mere fact of general Japanese exclusiveness in Manchuria ever since the Treaty of Portsmouth, there is a fourth precedent which not only serves Japan here but establishes the validity of her ordination in the true German apostolic succession. On October 16, 1900, Germany and Great Britain signed an agreement by which they undertook "to uphold for all Chinese territory as far as they could exercise influence" freedom to trade and "to every other legitimate form of economic activity for the nationals of all countries without distinction." The two Powers also disclaimed any intention or desire to make use of the then existing complications, *i.e.*, the Boxer upheaval and its aftermath, to obtain territorial advantages "in Chinese dominions"; and to consult with each other as to what appropriate steps to take if they found other Powers trying to fish in troubled waters. This was all very well, but five months later Count von Bulow informed the British Government that for the purpose of the above-quoted agreement, "the geographical term 'China' could not be held to cover Manchuria." Japan to-day evidently desires to follow the same line of action, to exclude Manchuria (and Mongolia) from the significance of the "geographical term 'China.'"

Of these four precedents, some are now of doubtful validity. Russia, by implication, abandoned her extra-mural privileges when she insisted on admission to the Consortium; and her agreements with China and Mongolia have been largely set aside by the logic of facts. Even Germany did not claim that Manchuria was outside the scope of the "geographical term 'China'" so far as railways were concerned, and there is some reason to suppose that had not Russia and Japan set their faces like flints against Mr. Knox's neutralization scheme Germany would have been willing to endorse it. Apart from the general recognition of the principle of the "Open Door," there is a very important precedent with which the present Japanese attitude is absolutely at variance, and that, interestingly enough, is a German precedent. In a Memorandum to the Washington Government the Imperial German Embassy wrote on February 14, 1902:—

> The Imperial German Government has no intention whatever of abandoning its adherence to the principle of the Open Door *recognized also for the Province of Shantung;* neither does it contemplate any measures which might be used by other Powers as an encouragement for further disintegration on their part the actual state of possessions of the Chinese Empire.
>
> The Imperial German Government wants to state that any apprehensions in this respect which may possibly have been created by press despatches emanating from English sources are without foundation. The facts are that a German Corporation has obtained mining concessions for certain strictly defined mineral lands situated in the Province of Shantung; but this does *in no way mean a monopoly of the whole province.*

The German Government expressly disclaimed any idea of a monopoly for the whole province of Shantung, but Japan distinctly claims such, apparently, for Manchuria and Mongolia.

It will be noted that the telegrams do not mention Shantung. Does this mean that exclusive monopoly in Shantung goes without saying? Or does it mean that in her demand for exclusive rights in Manchuria and Mongolia Japan is finding those "compensations" for leniency in Shantung to which several references have recently appeared in the press—a leniency or moderation which merits no reward if, as appears to be the case, it consists in retaining the kernel without the shell instead of retaining both kernel and shell?

It has been officially announced in Japan that Dr. Itakura and Mr Iwata, a procurator and a judge respectively of the Tokyo Court of Cassation, have been engaged by the Chinese Government as Legal Advisers. It is said that their term of office is fixed at two years, but it may be extended on its expiration.

Chinese Timbering Operations

The observant foreigner in China often notices the use, in native architecture, of poles in the round state as beams and rafters, and the clever manner in which a framework is erected, much like that used in the construction of the American skyscraper, which is later filled in with a single course of bricks. There is no waste of timber if the tree is used in its round state, freed only of its bark, and as timber is scarce that is the way it is used. It seems that every few years the bulk of the timber is noticeably shorter and thinner, for as the population increases and more houses are built the trees must be felled before they have reached their full growth. The timber lands are gradually pushed further and further in the interior, and hillsides are even rented for a term of years for the purpose of growing a crop of trees. Timber is dear in China—very dear—and big pieces are hard to get. Wood must be imported from Manchuria and from America, and nearly all the big pieces come from the latter country. However, there is still an enormous trade in the native wood poles; and an article in a recent issue of the "North-China Daily News" describes the logging operations into the Yangtze River from the region of Kanchow; of which a few notes are given below.

The average wood raft passing down the Poyang is valued at Tls. 20,000. The Nanchang merchants have more money than the wood merchants from Anhui, Linkiang, Kanchow and Changshu, so build as a rule the largest rafts: these are valued at 40 and 50 thousand taels.

The native enterprise necessary to move a huge, unwieldly, valuable wood raft from Lungnan on the Kuangtung border to Changchow two hours or so from Shanghai is of no mean order. Lungnan is 360 *li* above Kanchow on the Taokiang river; from Kanchow to Hukow on the Yangtze is over 1,300 *li*. This part of the journey is done down difficult rapids and across a wide expanse of water. The journey from Hukow down the Yangtze to Wuhu, Nanking and Changchow is not without its excitement and dangerous places.

Between Kanchow and Changchow well over $10,000 are used up passing Maritime Customs and native likin: usually two-thirds of the total cost of the raft is paid at the receipt of customs. Satisfying, however, every exorbitant publican, and paying all expenses, the raft owner may clear $10,000 in the sale of one raft

To manipulate a large raft across the Poyang and down the Yangtze a crew of 130 men is necessary. These men are well fed, well clothed, and well cared for. The usual number on an ordinary raft is 80 to 100 men. When the raft arrives at any place of importance, as Wuchang, Takutang and Hukow, the owner gives a sumptuous spread, with a plentiful supply of wine and pork. These occasional spreads keep the men in good spirits and maintain the cordial relationship between master and crew.

The journey from Kanchow to Changchow occupies three months. Two-thirds of the crew are engaged for this period of time. The owner pays them $7 or $8 from the trip, feeds them going and returning. The remaining third remain at Changchow or Nanking or Wuhu until the wood is all sold. This latter part of the crew is known as "long work" and they are engaged for ten months. It would seem as if a good part of the wood passing down the Kan river and across the Poyang Lake is for the Shanghai market. Changchow is on the Nanking-Shanghai Railway and has a water connexion with the Yangtze. The wood raft business has been going on for generations, and is full of interest and speculation.

Reform Needed in Cargo Handling Arrangements

Signs are pointing slowly but surely to the necessity of using machinery, power transport, and other modern devices to supplant the present method of handling goods in China by the coolie; for wages and other costs are rising rapidly and processes once an economy are now becoming an extravagance. Within the past few years the motor truck has appeared on the streets of at least one treaty port—Shanghai—and within the year several shipments of trucks of the two and three ton sizes have arrived and been put on sale. Once it was economical to shift burdens by man-power, but now the use of the cumbersome barrow, the burden coolie with his bamboo pole, and the two-wheeled truck hauled and pushed by a gang of shouting, sweating coolies, entails a cost that is high even when compared with haulage in America with unionized labor and costly vehicles. Soon we may expect to see the hauling of bulky cargo performed largely by the motor truck, and other changes must inevitably come about. Recently the need for change has been brought sharply to the notice of the businessmen of Shanghai by not only the expense of handling cargo, but by an actual shortage of coolies to move cargo into and out of the ships calling at the port. One of the largest ships on the Pacific felt the shortage of coolies so much as to make it seem necessary for a time to carry her cargo to Manila and Hongkong and take the chance of discharging it on the return voyage of the vessel, although eventually a crew was raked up and the cargo discharged. This incident and a number of others have caused a good deal of thought to be turned to the possible need of improvement in the present means of handling cargo, and a recent issue of "Shipping and Engineering" has contributed to the question an interesting article which is given below.

The situation as regards the amount of work to be obtained from the cargo coolies of the port of Shanghai appears to have grown worse rather than improved anl the difficulty of getting ships discharged or loaded has caused a general dislocation of trade and has deferred the sailing of almost all vessels by two or, in some cases, four days, according to "Shipping and Engineering." This has involved the shipping of the port in serious loss, its effect being the same as if a universal strike were in progress.

Many reasons have been advanced for the delay in getting the cargoes worked in or out, among them being sickness in the back areas where the coolies reside, a shortage of coolies, etc., but it is observed that, although there is a great shortage of labor as such, there is no great shortage of coolies, such casual labor as there is being disinclined to work for the whole of the working day. The reason of this is somewhat curious and arises from the temporary shortage having brought about a considerable rise in the wages of such casual labor which has outweighed the rise in the price of commodities. Unused to anything but a hand-to-mouth existence, and having no idea of saving his surplus money for future eventualities, the cargo coolie has found himself able, with two or three hours' work, to earn sufficient to pay for his daily ration of rice and cigarettes. The idea of buying more or better clothes or in other ways increasing his expenditure has not occurred to him and he has, therefore, argued that it is of no use continuing to work when he has already earned sufficient for his day's needs. An increase of wages in the effort to attract more coolies to work has had the opposite effect since, by doubling his present remuneration, he is able to earn his day's expenditure in two hours instead of four as yesterday and, consequently, half the amount of work is obtained and double the number of cargo-coolies are content to sleep away the remainder of the working day in the serene possession of all they require for that particular day. How far such increases can go before an influx of coolies from elsewhere is brought about or the adoption of a higher scale of living causes the wages of a full day's work to become a necessity, cannot be prophesied, but it is obvious that the cost of labor in the port is approaching that point where the adoption of mechanical appliances will become a necessity.

At the present day, the whole of the cargo work of Shanghai is performed by manual labor with the exception of the use made of the ship's winches in raising the cargo from, or lowering it into, the ship's hold. It is not many years ago that even this method was unknown, at least on the coast ships, the stevedores raising even the heaviest packages, such as gunnies, out of the hold without the aid of winches. To-day, no cargo of any kind can be discharged without the aid of steam, but beyond the ship's rail this method ceases and the cargo is worked wholly by hand until its delivery into the godown of destination. At a time when labor was excessively cheap, this method, though slow, was found to be economical, but with the rapid rise in the cost of labor, it will have to be seriously considered whether it is not advisable to instal cranes and other appliances for the rapid handling of cargo from the ship to the wharf and mechanical means of transport for its removal to its final destination. A point must be reached, with the rise in the cost of labor, when it will be cheaper to raise the cargo from the ship's hold with a steam or electric crane on the wharf which will be able to swing it in and deposit it within a few feet of the godown or straight onto the conveyance that takes it to its destination and such a point appears not to be very distant in the arrangements for handling cargo at Shanghai.

Engineering Congress at Java Next Year

Arrangements have been made for a general engineering congress to be held in Batavia, Java, in May, 1920. It will deal with harbors and means of communication (including railways, tramways, telegraphy, and telephony); irrigation, drainage, waterworks, etc.; roads and bridges, town planning, architecture, etc.; the production of energy, electricity, and industries (including ironworks, factories, and agricultural industries); mining and geology. It will deal with other subjects also, such as technical education, the artisan question, building materials, and aerial navigation. Invitations have been issued to engineers in countries bordering on the Pacific and Indian Oceans. The main object is to influence the technical development of eastern Asia.

The proceedings will be conducted in Dutch and English, and it is expected that this congress in Batavia will do much toward solving technical problems, as well as toward assisting in the development of the pan-Pacific movement by the opening up of new routes and the consequent extension of trade and the dissemination of information.

The address of the secretary of the congress is Kebon Sirih 56 Batavia, Java, Netherlands India.

Is Anglo-American Trade with China Threatened by Japan?

BY W. S. RIDGE

A Reuter telegram of considerable interest to British merchants and manufacturers connected with the China trade was despatched from London on July 9. This telegram reported that Mr. E. P. Crow, H.B.M.'s Commercial Attaché at Tokyo, in an address to the London Chamber of Commerce, had expressed the opinion that, given three conditions, the danger to British trade from Japanese competition was not serious. The three conditions were: that Britain soon returned to normal conditions; that output was not unreasonably curtailed; and that profiteering was checked. With these three conditions we in China can have little to do. We cannot guarantee them, and except very remotely the British community interested in the China trade cannot influence them. Mr. Crowe then went on to speak of the disadvantages under which Japanese industry labored. These disadvantages were: Japanese industry is in the transition stage between cottage and factory; Japanese labor, though plentiful, was not very efficient; Japanese wages though low must rise; little research work is being done in Japan; most Japanese industries are still in the imitative stage; Japan has practically no iron of her own; Japan depends for her raw materials on imports from abroad; Japanese coal is expensive; Japan's means of communication are defective; Japanese goods are cheaper than British goods but of inferior quality, and being of an inferior grade they are non-competitive. Finally, Mr. Crowe expressed the opinion that the demands of the world would be so large that for many years there should be plenty of room for both British and Japanese goods. With respect to the disadvantages enumerated most commercial men who know the facts will be inclined to endorse what Mr. Crowe says, but there are two points, the last of the disadvantages enumerated by Mr. Crowe, and his general final comment, to which a moment's attention may be devoted.

Mr. Crowe argues that Japanese goods being inferior to British goods, inferior to Western products generally he might have said, they are not of a grade to compete with British goods. In one sense this is quite true, but it is to be remembered that, so far as China is concerned, cheapness very largely outweighs inferiority. The general standard of living, the average family income, is so low that the cheaper article may, in spite of its inferior quality, be preferred, and thus very seriously compete with the better but dearer article. There is in commodities, within certain somewhat ill-defined limits, a law very much like Gresham's law with regard to currency, which says, roughly but inadequately, that bad money drives out good. In a similar way, inferior commodities may, under certain conditions, drive out superior; so that although in the very long run inferior articles may be regarded as non-competitive with superior, there is probably a period during which the inferior article displaces the superior, and for the time being it is no consolation to the merchant to know that his superior goods will be appreciated and asked for by the next generation.

Mr. Crowe also refers to the probability that the demands of the world will be so large that there should be plenty of room for both British and Japanese goods. This probability is doubtless high, but it may work in such a fashion that the preliminary and immediate needs of Europe will offer such temptations to British trade that the further-afield trade with China may not prove sufficiently remunerative to be maintained. There would be considerable danger of this were it not for the paramount fact that China is such a prolific source of raw materials, for which China must be paid by manufactured goods, that merely in payment for these raw materials the Western world must send manufactured goods to China. As an illustration of Chinese potentialities in this respect we may quote from the report of Mr. Maze, the Commissioner of Customs at Tientsin, for the year 1916. Concluding his remarks on the local trade of the port, he says:—

> The future of the Tientsin export trade seems to be assured, as the world's supply of raw material for making clothing and footwear is apparently insufficient, and it is, therefore, reasonable to anticipate that the production of North China will find a ready market for many years to come. At present, owing to rapid consumption caused by the wear and tear of war, the demand is exceptionally great, and high prices are being asked and obtained. Even when normal conditions return the markets of the world will need restocking, especially those of Austria and Germany, and it is unlikely that the exports from here will satisfy even part of the demand.

In spite of the unfortunate phrasing of the last clause, it is clear that the Tientsin Commissioner anticipates considerable drawing on China for raw materials; and this will mean higher prices in China and a higher standard of living, which will facilitate the purchase of the superior article manufactured in the West, so that the period during which the inferior article is displacing the superior may be considerably curtailed.

However, there is one enormous advantage that Japan has over the rest of the world, in the China trade, and that is geographical propinquity. This advantage which Japan has sought to improve by diplomatic means, has been of assistance both in legitimate and in somewhat doubtful ways. Of the less reputable ways in which the advantage has been used, one illustration will suffice. Until very recently, Japanese buyers at Shanghai bought heavily watered cotton, shipped it in subsidized bottoms to Japan, manufactured it in mills which had practically no Factory Law control, and had it back on the Chinese market as manufactured goods before the defects due to heavy watering had time to reveal themselves. The same cotton was regularly refused by Western buyers, partly because being heavily watered they would have been called upon to pay cotton prices for creek water, but also because, before they could get the cotton to Western cotton mills by way of a voyage through the tropics, the defect produced by heavy watering would have revealed itself and the manufacturers would have refused it on that ground alone, quite apart from the fact that the increased danger of working cotton so heavily watered would greatly have added to mill insurance costs. Other examples might be given of the illegitimate advantages derived from geographical propinquity; but they are unnecessary.

Of the legitimate advantages derivable from geographical propinquity only a few words are necessary, and they all resolve themselves into reduced costs, and therefore cheapness. Every item in transportation costs is less for the shorter distance, and when to this is added the fact of a substantial subsidy, as has been the case with Japan, the advantages of geographical propinquity are considerably enhanced. There are two advantages over the Western trader that the Japanese enjoy in the highest degree. The first is the advantage of language. It is comparatively simple matter for the representative of Japanese commerce in China to speak and read Chinese. On the value of this advantage there is no need to dilate. The second advantage is that conditions of life for a Japanese in China are much more closely similar to those to which he is accustomed than is the case with the Westerner, and the result is that he lives much more cheaply, which means that his distributing or collecting costs are correspondingly—and considerably—lower.

Under these advantageous circumstances, and bearing in mind the Japanese reputation for "push" and efficiency, it would appear natural that the rate of increase in Japanese trade in China should both outstrip that of Japanese trade with other parts of the world and that of other foreign trade with China, and the following tables have been compiled to show how far this is the case. The first table, Table I, in three parts, A, B, and C, sets out the progress of Japanese trade for nearly half a century, forty-five years of which were before the war, and the last three under war conditions. It will be seen that according to "A" part of the table, the total Japanese export trade moved from Y.21,000,000 to Y.1,127,000,000 in forty-three years, including three years under war conditions, that is to say, it multiplied itself about fifty times. In an ante-bellum period of forty years it moved from Y.21,000,000 to Y.632,000,000, or multiplied itself about thirty times. The same table shows that while the total foreign export trade was multiplying itself fifty times, the exports to China only multiplied themselves forty times, moving from Y.5,000,000 to Y.192,000,000; and in the ante-bellum period of forty years it multiplied itself only thirty times, moving from Y.5,000,000 to Y.154,000,000. That is to say, Japan's export trade to China did not keep pace with her general export trade, and geographical propinquity does not seem to have helped it much. Turning to imports, Section B of the table, we find that in the forty-three-year period, including three war years, Japanese imports generally rose from Y.28,000,000 to Y.756,000,000, multiplying themselves about twenty-seven times; while in the ante-bellum period they rose from Y.28,000,000 to Y.729,000,000, multiplying themselves twenty-six times. The imports from China rose in the forty-three-year period from Y.10,000,000 to Y.108,000,000, multiplying themselves about eleven times; while in the ante-bellum forty years they rose from Y.10,000,000 to Y.60,000,000, multiplying themselves six times. Here again Japan's trade with China did not keep pace with her general trade, and geographical propinquity did not avail her much. In the final Section C, of the table, the total foreign trade of Japan, exports and imports together, are set out, and it is seen that while the total rise over the forty-three-year period is from Y.50,000,000 to an outside figure of Y.2,000,000,000, giving a self-multiplication of about forty times, the general trade with China rises only from Y.15,000,000, to Y.300,000,000, a self-multiplication of only twenty times; and in the forty-year period before the war, while the general rise was from Y.50,000,000 to Y.1,350,000,000, a self-multiplication of twenty-seven times, the China trade rose only from Y.15,000,000 to Y.215,000,000, or multiplied itself just over fourteen times. The general inference to be drawn therefrom is that Japan has not materially profited by her geographical propinquity to China, and this is borne out by the examination of the column of percentages in each of the three sections of the table. The share of China in Japan's export trade in 1873, was 22 per cent.; in 1913 it was only 24 per cent.; and in 1916 it was only 17 per cent. The share of China in Japan's import trade in 1873 was 35 per cent.; in 1913 this figure had dropped to 8.5 per cent.; and in 1916 it had only recovered to 14.5 per cent. Taking the trade as a whole China's share in 1873 was 30 per cent.; in 1913 it was 15 per cent.; and in 1916 it was 16.5 per cent.

Table II, in two sections, A and B, serves to illustrate two points: first, the advantage Japan has gained from her comparative isolation from the war area with consequent non-interruption of commercial intercourse with China and absence of the usual competition from Western commercial men; and second, that it is not clear that Japan derives very exceptional benefis from her political domination of special areas. To take the first point, a few simple additions and divisions will show that Japanese trade with China in the five ante-bellum years averaged Y.105,000,000, whereas durng the war period it averaged Y.214,000,000 or more than double. Again her imports from China were of an average annual value of Y.60,000,000 for the ante-bellum quinquennium, while they reached an annual average of Y.130,000,000 during the war, or more than double. Much the same was true in the Kwantung Leased Territory, South Manchuria. Average annual exports from Japan to Kwantung before the war were worth Y.25,000,000 at the outside, and during the war were worth over Y.50,000,000, while average annual imports from Kwantung before the war were slightly under Y.20,000,000 and during the war were very nearly Y.50,000,000. The second point is worth some consideration. It is doubtless not safe to generalize on the statistics of a few years, and especially when such abnormal years as the years 1914-1918 are included in the series, but to take the figures for the decennial period 1909 to 1918, for China and the Leased Territory of Kwantung, it may be noted that while the trade with China at the end of the period is 533 per cent., of what it was at the beginning, the trade with the Leased Territory of Kwantung rose to 633 per cent. of the earlier figure. Were that all to be said, the evidence in favor of the advantage of political domination would be fairly strong; but as a matter of fact that is not all that there is to be said. The general condition has to be kept in mind, that Kwantung imports and exports vast quantities of merchandise the final destination and original provenance of which are not Kwantung itself, but the great hinterland of Kwantung. When allowance is made for this, the chief factor modifying the comparison, it is probable that the rate of increase for Kwantung is not higher than for the rest of China. From that, one of two deductions might be made, namely, either that Japan's political predominance in Kwantung is of no value to her, or that Japan exercises political pressure throughout China that enables her to maintain in other parts of China a trade progress equal to that in Kwantung. The figures given in the table showing the distribution of Japanese trade throughout China and Manchuria, and exclusive of Kwantung, do not help much towards the formation of a judgement. In Manchuria, where Japanese political influence is supposed to be strong, the increased trade in four years was 131 per cent.; in North China, which includes Shantung, where again Japan has a political stronghold, the increase is 143 per cent.; in Central China, where Japan has no special stronghold, but where she is admittedly fighting exceptionally hard to secure a commercial footing and to undermine if possible, all competitors, the increase is 235 per cent.; and in South China, which includes the territory affected by the close propinquity of Formosa and the political influence emanating therefrom, the increase is only 66 per cent. The data are admittedly too limited to use as the premises of a final judgement, but they suggest that the Japanese trader is liked best where he has least political backing; and this judgement is indirectly confirmed by the fact that Japanese trade has prospered better in other parts of the world, as we have seen from Table I, where Japanese political domination is non-existent, than in China, where political pressure is never far distant.

So far we have been comparing different spheres of Japanese trade. We may now turn to inquire to what extent Japanese trade competes with other trade, especially in China, where it would be expected that geographical propinquity would give it an enormous preponderance. A full examination of this question would mean writing a volume, but some guidance may be obtained from comparison of Japanese with British and American trade with China during the decade 1909-1918, a period which consists of an ante-bellum quinquennium and a quinquennium the chief factor in which was the war. A word of explanation is necessary with respect of Table III, which gives a comparison of British, American and Japanese trade during the decennium. It will be noted that before arriving at a final percentage for each nationality there has been made what is called a Hongkong Allowance. If the Chinese Maritime Customs Returns are examined it will be found that the Hongkong trade is separately recorded, but a note is added to the effect that, "the imports from Hongkong come originally from, and the exports to that Colony are further carried on to, Great Britain, the Continent of Europe, America, Japan, Australia, India, the Straits, etc., and the Coast Ports of China." Again, Hongkong being a free port, does not publish actual statistics of its trade, and so it is impossible to know with exact accuracy the amount of its trade originating in or destined to any particular country, and so an estimate has to be made so that that amount can be added to the Maritime Customs figures in order to get approximately the trade of any given country with China. How the different allowances shown in the table are arrived at is shown in a note to the table, the only point in connection therewith to be mentioned here being to emphasize that the allowances made undoubtedly disadvantage British trade and advantage the trade of Japan, and possibly that of the United States. This, however, matters little as we are not arguing a thesis but trying to see things impartially and find what they mean. The first thing that Table III means is that not until British activity had by war necessity been enormously reduced in the China trade did Japan begin to overhaul British trade seriously in the Chinese market. Forty-five years of trade activity in China, with all the advantages of geographical propinquity, cheap collection and distribution, ease of language-acquirement and the rest, had left Japanese trade even on the most favorable calculation fifty per cent. behind British trade in China. Even five years of war did not reverse the position. For the quinquennium immediately before the war. Britain handled 37.1 per cent. of China's foreign trade, while Japan only handled 17.9 per cent. During the war the British figure dropped only 32.1 per cent. while the Japanese figure rose to 29.6 per cent., a difference of 4.7 per cent., which, curiously enough, is exactly the figure by which American trade rose as between the ante-bellum quinquennium and the war period Table III shows that China's foreign trade rose from an average of Hk. Tls. 853,000,000 annually in the period 1909-1913, to an average of Hk. Tls. 970,000,000 in the years 1914-1918; but this is a rise in values simply due to the general world-rise in prices. That this is so is partly demonstrated by the fact that both in the ante-bellum period and in the war period itself, the average annual tonnage entering and leaving Chinese ports was 88,000,000 tons. The inference, therefore, is more than justified, it is ineluctable, that Japan was not able, even with British and, latterly, American competition removed, to supply to her nearest market the quantity of commodities that her rivals had previously supplied. From this it will be fair to conclude that given a return to normal conditions in Britain and America, Japan will have serious difficulty in retaining the trade she has taken up during the war period.

The release of British and American shipping from Government charters, and the immense ship-building programmes of both countries, especially of the United States, suggest that Japanese shipping will have a very stiff fight to retain the advance it has made in the China trade. Table IV shows the shares that Britain, the United States, and Japan have respectively taken during the last decennium in the shipping trade of China. The reckoning is made in three ways: first, by tonnage engaged in the entire shipping trade of China; second, by the value of the trade carried in the respective bottoms; and third, by the revenue paid by the shipping of the three nationalities. These three methods of assessment are combined for each of the two periods, the ante-bellum quinquennium and the war period, and the result is that while Anglo-American shipping formed 44.68 per cent. of the shipping engaged in the China trade in the ante-bellum period and the Japanese share was 18.99 thereof, in the war period the Anglo-American share fall to 36.32 per cent. while that of Japan rose to 30.01 per cent. In the future, Japan, in order to keep the position she now has, must increase her shipping efficiency, increase her actual tonnage, adopt the very latest devices in shipbuilding and in engineering connected with shipping, and send to the scrap-heap antiquated shipping that ought not to be at sea but has been found seaworthy enough to assist in the capture of trade while rivals have been employed elsewhere on their lawful and imperative occasions.

That Japan intends to compete very strongly for the China trade has been evident to all who have watched her policy in China during the past three years. Her loans and her political activities have been of the most naked kind of dollar diplomacy. Some indications of her strenuous preparations for capturing the Chinese market may be gathered from Table V which shows her banking position in China. The growth of Japanese banking interest in China may be partially measured by the expansion of Japanese banking capital represented in China. In 1893 the total banking capital represented in China was Y.42,000,000, in 1900 it was Y.62,000,000; in 1907 it was Y.65,000,000; in 1914, Y.85,000,000; in 1916, Y.115,000,000; in 1917, Y.135,000,000; and at the end of 1918, Y.146,000,000.

It will be remembered that some time ago there was an agitation carried on by Japanese capitalists and publicists for a combination between Japanese brains and American capital, and there have several times been agitations, though not so aggressive, for the combination of British capital and Japanese brains. Table VI suggests that the brain advantage, so to speak, is not altogether on the side of Japan. It shows that while the annual average number of persons employed in British commerce in China for the ten years 1909-1918 was 9,063, British trade during that period amounted to an annual average of Hk. Tls. 322,427,829; that is to say, the average annual commercial value of the commercial Briton in China was Hk. Tls. 33,481; while Japan had on an average 94,982 persons engaged in commercial pursuits in China, doing an annual average trade of Hk. Tls. 211,518,772, thus giving the Japanese commercial man in China an annual average commercial value of Hk. Tls. 2,228. It would, of course, be unwise to press these figures too far, but their suggestion of differential efficiency is too obvious to be entirely ignored. In summary we may say, that the figures we have examined support a conclusion that may be expressed somewhat more generally than Mr. Crowe's opinion, namely, that on the whole Anglo-American trade in China, given a reasonably early return to normal conditions—by which we do not necessarily mean a return to ante-bellum conditions, but a return to a condition in which free play is again allowed, need not greatly fear the rivalry of Japan.

TABLE I.

(A)

EXPORTS FROM JAPAN 1868-1916.

Year	Total Yen	To China Yen	Chinese Percentage
1868	15,553,473	(Unknown)	—
1873	21,635,441	4,786,606	22
1883	36,268,020	5,928,977	16.5
1893	89,712,865	7,714,620	9
1903	282,502,442	64,994,180	22.5
1913	632,460,213	154,660,428	24
1914	591,101,461	162,370,924	27.5
1915	708,306,997	141,122,586	20
1916	1,127,461,118	192,712,626	17

(B)

IMPORTS TO JAPAN 1868-1916.

Year	Total Yen	From China Yen	Chinese Percentage
1868	10,693,072	(Unknown)	—
1873	28,107,390	9,881,533	35
1883	28,444,842	5,768,226	20
1893	88,257,172	17,095,973	20
1903	317,135,518	45,458,057	14.5
1913	729,431,644	61,223,038	8.5
1914	595,735,725	58,305,783	10
1915	532,449,938	85,847,735	16
1916	156,427,910	108,638,636	14.5

(C)

JAPAN'S FOREIGN TRADE, 1868-1916

Year	Total Yen	With China Yen	Chinese Percentage
1868	26,246,545	(Unknown)	—
1873	49,742,831	14,668,139	30
1883	64,712,862	11,687,203	18
1893	177,970,037	24,810,395	14
1903	606,637,960	110,452,237	18
1913	1,361,891,857	215,883,466	15
1914	1,186,837,186	220,676,707	18
1915	1,240,756,935	226,960,321	18
1916	1,883,896,028	301,351,262	16.5

TABLE II (A)

EXPORTS FROM JAPAN TO CHINA

Year	Manchuria	Ports in China Proper				China Total	Kwangtung Territory
		Northern	Central	Southern	Unknown		
	Yen	Yen	Yen	Yen	Yen	Yen	Yen
1909						73,087,891	16,196,930
1910						90,037,354	19,148,456
1911						88,152.792	23,063,188
1912						114,8.3,727	27,544,858
1913						154,660,428	29,836,345
1914						162,370,924	22,270,379
1915	16,332,514	48,361,773	72,469,795	1,544,910	2,213,594	141,122,586	22,200,802
1916	26,169,720	63,096,266	98,739,153	1,790,660	3,116,827	192,712,626	37,059,910
1917	49,300,183	92,868,681	169,554,895	1,493,861	5,162,910	318,380,530	65,724,838
1918	44,703,082	103,669,881	201,529,641	1,873,085	7,375,125	359,150,814	116,373,972

TABLE II (B)

IMPORTS TO JAPAN FROM CHINA

Year	Manchuria	Ports in China Proper				China Total	Kwantung Territory
		Northern	Central	Southern	Unknown		
1909						46,886,539	18,164,387
1910						68,569,541	9,740,160
1911						61,999,710	20,543,797
1912						54,807,116	25,707,353
1913						61.223,038	30,877,894
1914						58,305,783	31,277,019
1915	17,145,226	21,845,278	41,414,403	4,497,106	945,722	85,847,735	27,819,092
1916	16,161,838	30,711,376	51,889,595	8,464,627	1,411,200	108,638,636	33,953,897
1917	21,179,090	30,571,664	73,727,473	6.886,284	906,525	133,271,036	53.180,199
1918	30,653,772	63,493,941	174,547,359	9,964,988	3,047,273	281,707,333	100,619,056

TABLE III.

COMPARATIVE SHARES OF BRITAIN, THE U.S.A. AND JAPAN IN THE FOREIGN TRADE OF CHINA 1909-1918.

Year.	Total Value Chinese Foreign Trade.	General British Direct Trade.	British Percentage.	Allowance from Hongkong.	Corrected British Figures.	Corrected Percentage.	U.S.A., Hawaii and Philippines.	American Percentage	Hongkong Allowance.	Corrected Percentage.	General Japanese Direct Trade.	Percentage.	Hongkong Allowance.	Corrected Percentage.
	Hk. Tls.	Hk. Tls.		Hk. Tls.	Hk. Tls.		Hk. Tls.				Hk. Tls.			
1909	757,150,881	138,161,343	18	44,524,311	291,914,928	38	66,988,414	9	2	11	111,533,342	15	.75	16
1910	843,798,222	146,311,934	17	47,532,111	327,721,010	39	57,777,805	7.5	2	9.5	138,361,423	16.5–	.825	17.5
1911	848,842,109	166,923,388	19.5	49,124,220	301,043,997	35 5	75,350 965	9	2	11	141,554,857	16.5 +	.825	17.5
1912	843.617,434	163,474,089	20	50,037,105	301,222,633	36	72,121,065	8 5	2	10.5	146,278,656	17.5 +	.875	18 5
1913	973,468,103	188,047,188	19.5	56,309,129	345,073,889	37.5	75,232,761	8	2	10	184,890,848	19 +	.95	20
1914	925,488,011	182,566,108	20	52,484,484	314,916,907	33	84,540,092	9	2	11	191,736,051	21–	1	22
1915	873,336,883	172,658,733	20	50,521,225	303,127,352	37	102,054,894	13	2	15	197,926,331	22.5 +	1.1	23.5
1916	998,204,361	163,108,680	16	43,553,323	316,386,579	31.5	129,272,416	10.5	3	13.5	273,412,978	27 +	1.35	28.5
1917	1,012,450,404	139,042,282	13.5	35,815,129	310,260,563	30.5	159,015,970	16	3	19	327,440,810	32.5 +	1.5	34
1918	1,040,776,113	122,798,031	12	33,401,580	312,581,417	30	141,166,951	14	3	17	402,252,670	38 +	2	40
Annual Average before War	853,000,000				Annual Average before War	37.1	Annual Averge before War			10.4	Annual Average before War			17.9
Annual Average during War	970,000,000				Annual Average during War	32.4	do. do. during War			15.1	do. do. during War			29.6

(1) By General British Direct Trade is meant the sum of the trade figures given in the Maritime Customs Reports for Singapore, British India, the United Kingdom, Canada, Australia and South Africa.

(2) *Hongkong Allowance.* The geographical distribution of the British Empire in reference to Hongkong warrants the assumption that of the Hongkong trade recorded in the Chinese Maritime Customs Returns the ratio of that whose provenance or destination is some portion of the British Empire other than Hongkong is proportionate to the ratio between the amount of the direct trade between China and parts of the British Empire other than Hongkong and the total amount of Chinese foreign trade. As a matter of fact, there is every reason to believe the ratio is actually much higher, but as we are not trying to prove a prejudice but to see impartially what the international trade relations are, we are content to accept the lower ratio, which is undoubtedly disadvantageous to British trade. The Hongkong allowance for British trade is, therefore, calculated thus. Take the year 1909 for illustration. The Customs Returns give a total British Empire trade with China of Hk. Tls. 138,161,343, leaving out the Hongkong trade for the year. This makes the British Empire trade with China 18 per cent. of the whole of China's foreign trade. The Hongkong-China trade for the year is recorded at Hk. Tls. 247,390,617. Taking 18 per cent. of this as the British Empire share in the Hongkong trade with China, we get a Hongkong Allowance of Hk. Tls. 44,524,311. This added to the General British Direct Trade gives a corrected total of Hk. Tls. 291,914,928, and this works out at 38.3 per cent. of the whole Chinese Foreign Trade.

(3) In making the Hongkong Allowance for American trade, the amount of Philippine trade with China has been taken as the rough equivalent of the American trade delivered through Hongkong, and this gives a more advantageous position for American trade than would be obtained by applying to it the method of getting the Hongkong Allowance for British trade.

(4) The Hongkong Allowance for Japan is reckoned at 5 per cent. of her general trade with China. This is at least a fair allowance, for a study of Japanese trade returns shows that Japan's trade with Hongkong for the last fifteen years has ranged between 1 and 2 per cent. of her trade with China; and the figures of her South China trade show much the same ratio of her total China trade, as Table II testifies. In the present table a *plus* or a *minus* is added to the percentage of General Japanese Direct Trade to indicate that the actual percentage is a decimal point or so higher or lower, but not sufficient to warrant rising or falling to the next whole unit; and allowance is made for this in stating the Correct Percentage.

TABLE IV.

BRITISH, AMERICAN AND JAPANESE SHARES, IN THE SHIPPING TRADE OF CHINA, 1909-1918.

FLAG	BRITISH			AMERICAN			JAPANESE		
YEAR	Percentage by			Percentage by			Percentage by		
	Tonnage	Trade	Revenue	Tonnage	Trade	Revenue	Tonnage	Trade	Revenue
1909	39.21	42.09	50.39	.93	.54	.39	21.84	14.57	14.98
1910	38.58	40.97	47.35	.82	.41	.46	21.29	15.98	16.90
1911	40.47	42.83	50.55	.83	.45	.50	22.35	16.82	17.04
1912	44.20	45.16	50.91	.83	.50	.45	23.10	18.26	17.68
1913	40.84	41.75	48.22	.96	.65	.51	25.10	19.44	20.50
1914	40.28	40.07	45.36	1.06	1.09	.97	24.59	20.43	23.12
1915	41.55	41.63	43.54	.89	1.13	.86	26.33	23.29	27.84
1916	40.72	38.07	37.78	.91	1.59	1.51	27.53	28.96	35.04
1917	38.64	33.14	31.84	1.30	2.38	2.01	28.28	32.77	40.17
1918	37.27	31.11	30.86	1.51	2.71	2.99	31.51	38.16	42.20
Before War Average	40.66	42.56	49.48	.87	.51	.56	22.53	17.01	17.42
General Average	44.23			.65			18.99		
War Period Average	39.69	36.80	37.87	1.13	1.78	1.67	27.65	28.72	33.67
General Average	34.79			1.53			30.01		

TABLE VI.

BRITISH, AMERICAN AND JAPANESE COMMERCIAL FORCES IN CHINA, 1909-1918.

	BRITISH		AMERICAN		JAPANESE	
Year	Firms	Persons	Firms	Persons	Firms	Persons
1909	502	9,499	113	3,168	1,492	55,401
1910	601	10,140	100	3,176	1,601	65,434
1911	606	10,256	111	3,470	1,383	78,206
1912	592	8,690	133	3,869	733	75,210
1913	590	8,966	131	5,340	1,269	80,219
1914	534	8,914	136	4,365	955	84,948
1915	599	8,641	157	4,716	2,189	101,589
1916	644	9,099	187	5,580	1,858	104,275
1917	655	8,479	216	5,618	2,818	144,492
1918	606	7,953	234	5,766	4,483	159,950
Total	5,929	90,637	1,518	45,068	18,681	949,824
Average	592	9,063	151	4,506	1,868	94,982
Average Annual Trade	Hk. Tls. 322,427,829		Hk. Tls. 96,342,133		Hk. Tls. 211,518,772	

TABLE V.

JAPANESE BANKING INSTITUTIONS IN CHINA ON 31ST DECEMBER, 1918.

Name.	Exchange Bank of China.	Yokohama Specie Bank	Bank of Taiwan.	Bank of Chosen.	Sumitomo Bank.	The Mitsui Bank.	Mitsuibishi Banking Department.	The Shohryu Bank.	Number of Offices Opened in the Year	Total Offices Opened
Head Office	Peking	Yokohama	Taikoku (Formosa)	Seoul (Korea)	Osaka	Tokyo	Tokyo	Dairen		
Founded Capital Reserve.	1918 Y. 10,000,000	1880 Y. 42,000,000 Y. 23,000,000	1899 Y. 20,000,000 Y. 5,680,000	1909 Y. 20,000,000 Y. 1,930,000	1912 Y. 30,000,000 Y. 3,600,000	1909 Y. 20,000,000 Y. 12,500,000	Y. 1,000,000	1906 Y. 3,000,000 Y. 313,000		
Date of Opening	Branches	Branches	Branches	Branches	Branches	Branches	Branches	Branches		
1893	...	Shanghai	...	...	...	...	...	...	1	1
1894	...	...	...	...	...	...	...	...	...	...
1895	...	...	...	...	...	...	...	...	...	...
1896	...	...	...	...	...	...	...	...	...	...
1897	...	...	...	...	...	...	...	...	...	...
1898	...	...	...	...	...	...	...	...	...	...
1899	...	Tientsin	...	...	...	...	...	...	...	...
1900	...	Newchwang	Amoy	...	...	...	...	...	1	2
1901	...		...	...	...	...	...	...	2	4
1902	...	Peking	...	...	...	...	...	...	...	...
1903	...		[Hongkong]	...	...	...	...	...	1	5
1904	...	Dairen	...	...	...	...	...	...	...	...
1905	...	Mukden	Foochow	...	...	...	...	...	1	6
1906	...	Hankow	...	...	...	...	...	...	2	8
1907	...	Changchun	Swatow	...	...	...	...	Newchwang	2	10
1908	...	...	...	...	...	...	...	...	2	12
1909	...	...	...	Antung	...	...	...	Dairen	1	13
1910	...	...	Canton	...	...	...	...	...	1	14
...	...	...	...	...	...	...	...	Changchun (?)	...	...
1911	...	...	Shanghai	...	...	...	...	Mukden	3	17
1912	...	Harbin	Kiukiang	...	...	...	...	...	1	18
1913	...	Tsingtao	...	Changchun	...	...	...	...	2	20
...	...	...	...	Mukden	...	...	...	...	...	...
...	...	...	...	Dairen	...	...	...	Fushun (?)	...	...
1914	...	...	Hankow (?)	...	...	...	...	Kaiyuan	6	26
1915	...	Tsinanfu	...	...	...	...	...	...	1	27
1916	...	...	...	Newchwang	...	...	...	...	1	28
...	...	...	...	Harbin (?)	...	...	...	...	...	...
...	...	...	...	Kaiyuan (?)	...	...	...	...	...	...
1917	...	...	...	Langching-tsin (?)	Shanghai (?)	...	...	Tientsin (?)	5	33
...	...	...	...	Kirin	...	...	...	...	...	...
...	...	...	...	Tiehling	...	...	...	...	...	...
...	...	...	...	Port Arthur	...	...	...	...	...	...
...	...	...	...	Supingchih	...	...	...	...	...	...
...	...	...	...	Liaoyang	Hankow (?)	Shanghai	...	Chefoo (?)	9	42
1918	Peking	Kaiyuan	...	Shanghai	...	...	...	...	...	...
...	...	...	...	Chenchiatung	...	...	...	...	...	...
...	...	...	...	Tsingtao	...	...	Shanghai	...	6	48

NOTE:—Where the name of a place is followed by a query mark the exact date of the opening of the branch is uncertain. The uncertainty does not extend to the question whether there is or is not a branch of the bauk in question at the place indicated.

Chinese Object to Japanese Contractors in Honan

Japanese statesmen ought to weigh well the significance of the opposition of the people of Honan to a reported arrangement on the part of the management of the Lung-Hai railway—the railway destined to run across Central China from Lanchow to the sea—with certain Japanese for the construction of a section of the line. The Honan gentry, as soon as the arrangement was rumored, expressed the strongest opposition to the appearance of Japanese influence in their province, and raised a clamor which should teach the aggressive among the Japanese that their policy of the past has created intense distrust in the minds of most Chinese, the result being that it will be difficult for Japanese to carry on construction work in any other section of China than where they have the advantage of political dominance unless there is a distinct change of Japan's policy. Business and financial men in Japan should also seriously consider just what this attitude on the part of the Chinese means. Obviously the people of China are wildly alarmed even when legitimate business is projected by Japanese business men, which clearly indicates that the effect of the illegitimate business which has been done in the recent past under camouflage has biassed the Chinese to such an extent that they are incapable of judging between what is honest commercial effort and what is predatory politics. This condition has the result, as indicated by the Honan affair, of influencing the Chinese to announce in no uncertain language that they will have none of the Japanese, no matter in what guise, in the interior.

The pother in Honan began in August. When it was reported that the Director-General of the railway had let a contract to Japanese the people did everything they could to have the decision reversed and succeeded in making their voice heard. They impeached the Director-General, and they brought pressure on Peking. As a matter of fact we are reliably informed that in reality no contract was signed with the Japanese, but this does not minimise the importance of the movement against Japanese participation as contractors in the construction of the line. That Japanese contractors are entitled to tender for work open to foreigners to undertake is unquestioned, and neither the Chinese administration nor the Compagnie Générale, who control the construction of the railway, can exclude any foreign nationality from competing with the Chinese sub-contractors for work for which tenders are asked by the Engineer-in-Chief. If, however, local officials, the gentry and the people, object to Japan getting an " equal opportunity " to assist in the construction of certain Chinese railways, then an issue is raised which neither the Director-General nor the Company holding the contract for the building of the line are competent to decide. Japanese who are embarrassed by such action on the part of the people will have to go to the bottom of things to arrive at the reason for the opposition, and very slight investigation will reveal the fact that the people are hostile to Japanese interests solely on account of past transactions which are calculated to be minatory to the sovereignty of China and the well-being of the Chinese people. This is a natural development, and one which is likely to spread rather than diminish owing to the unfortunate policy adopted by the Japanese Government in connexion with Kiaochow and the economic rights in Shantung Province.

What the people feel with regard to Japan may be gauged by the telegram despatched to the Peking Government by General Chao-ti, the Governor of Honan. Among other things General Chao said:—

" The news of Japanese participation in the construction of the Tung-Lo Railway has aroused widespread opposition. Several years ago the gentry and merchants of Honan planned to build the line themselves, but the Government took over the matter in pursuance of the railway nationalization scheme. The Provincial Assembly and other organizations inform me that the Japanese have sent engineers to survey the section from Kwan-yin-tang to Wen-Hsiang, and that the railway will be built under Japanese direction as they have signed a contract with the Government for the undertaking. [No contract was signed.—Ed. F.E.R.] This is practically inviting robbers into one's own house. The Tung-Lo line forming as it does the middle link of the Lung-Hai Railway, is connected with two other big trunk lines, the Tientsin-Pukow Railway and the Peking-Hankow Railway. Once the Japanese come into possession of it, they will at once establish their dominant influence in the very heart of China. The people are already indignant over the Tsingtau question, and if their wishes in this connexion are ignored, then serious trouble will follow. The people urged me to request the Government to cancel the Japanese loan and dismiss the Japanese engineers. [No Japanese engineers were engaged. —Ed. F.E.R.] I hasten to inform the Government regarding the popular feeling against Japanese participation in the Tung-Lo Railway and beg to advise that the proposition should be abandoned, and a new scheme be drawn up for the construction of the railway so as to appease the people, etc."

In reply, Director-General Sze personally sent a telegram to General Chao, to explain matters, pleading that the measure was necessary in order to continue construction of the railway. This reply added fuel to the fire and the opponents redoubled their fierce onslaught. The Honan Provincial Assembly, on August 6 sent Mr. Kang, Speaker of the Assembly, to Peking to lay the whole case before the Government and to urge the cancellation of the Japanese deal.

General Chao Ti, in reply to Director-General Sze's message, sent another telegram to the Ministry of Communications warning the Government that popular feeling is not to be trifled with and that Japanese penetration into Honan must be frustrated.

The Ministry of Communications fears that the continuance of the existing policy would start more trouble than it could handle and, consequently, submitted a memorandum to the Cabinet suggesting measures to smooth the matter over.

The result was that the Government was so impressed by the popular agitation that it definitely decided to abandon the project of Japanese participation, and the Ministry of Communications addressed a telegram to the Provincial Assembly and the Chamber of Commerce of Honan stating that the Government has decided that the arrangements, if any, made with the Japanese for the construction of the western section of the Tung-Lo railway, be at once cancelled, and that particulars had been telegraphed to General Chao Ti who would assure the public of the sympathy of the Government for the people of his province.

The term Tung-Lo means the railway section from Tungkwan to Loyang. The actual section involved in the controversy, according to Director-General Sze, is from Kwanyintang to Shen-hsien, near Wen-hsiang, a distance of about 100 *li*, and by a further extension of about 40 *li*, the railway will connect with Tungkwan, and pass into Shensi Province. Travelling by mule cart, it takes three days to accomplish the journey from Loyang to Tungkwan, but if the route is covered by rail it will take but two hours, the railway, en route, touching the Yellow River at Shen-hsien.

In one of General Chao Ti's telegrams, it is suggested that the Ministry of Communications should instruct Director-General Sze to construct the line in question entirely with Chinese capital and by Chinese engineers, a feat which is not at all impossible. The Honan gentry expresses the desire to take up the project by emulating the example of the Shantung people who are raising funds to repay the Japanese loans for the Kaomi-Hsuchow and Tsinan-Shunteh Railways. The Honan gentry pertinently ask, why, since the Government is unable to build the Tung-Lo Railway by itself, it does not hand back the project to the people and let the Honan people build the line as they planned several years ago?

Detailed Chinese Exports in 1918

The "Analysis of Foreign Trade: Exports" report of the Chinese Maritime Customs for 1918 has been issued, and it is now possible to amplify the information on the foreign trade of 1918 given in the June issue of THE FAR EASTERN REVIEW. Values mentioned in this article are in Haikwan Taels, the average equivalents for one tael in foreign currency being as follows:—

English	5s. $3\frac{7}{16}$d.
American	$1.26
French	Fr. 7.11
Indian	Rs. 3.55
Japanese	Yen 2.37
Mexican dollars	1.61

It is interesting to again note the rising value of the tael as expressed in terms of gold currency. Standing at the average of Gold $0.62 in 1915, the tael rose to $0.79 in 1916, to $1.03 in 1917, and to $1.26 in 1918, with equivalent increases in other gold currencies at approximately the same ratio. With the fluctuating value of the tael and the rapidly changing market prices of the past few years, quantities should be taken for purposes of comparison, and for this reason quantities are given for each item.

The first classification given in the report is that of cotton goods. Nankeens and native fancy cloths are still being made in great quantities and still form an important export. Cotton yarn is another large export under this classification. Figures are as follows:—

	1917		1918	
		Tls.		Tls.
Nankeens	48,887 pls.	2,912,371	46.826 pls.	2,714,705
Fancy native cloth...	499.553 pcs.	1,079.380	511,483 pcs.	1,268.686
Cotton yarn	27.615 pls.	450,204	27,745 pls.	100,497

Metals comprise the next classification, with antimony, crude and regulus, leading the list. Antimony was a war need, and was drawn from China in great quantities before rising prices and high ocean freights, on the one hand, and adulteration or poor quality to a slight extent, on the other, made it advisable to make purchases abroad when foreign supplies became available. In 1916, exports of regulus were 172,137 piculs valued at Tls. 6,912,144; of crude 197.965 piculs valued at Tls. 4,911.359; and of ore 194,525 piculs valued at Tls. 1,383,243. What has befallen the trade since then is graphically shown by the figures given below. In the case of the pig iron figures, it will be observed that higher market values in the Orient account for the enormous advance in value, as the quantity is little more than that shipped in the preceding year, when the value was but one-third that of the 1918 values. Most of the pig iron, of course, went to Japan; her purchases account for Tls. 16.548,137 of the 1918 figures. Also, of this total exports from Hankow account for Tls. 11,920.356. In the case of copper ingots, the decrease is due to the falling off of exports to Japan, which in 1917 accounted for Tls. 9,843,-712. The figures given for tin represent the huge trade from Mengtsz (exports from which place amounted to 10,039,391) to Hongkong for refining and final export. Hongkong accounted for Tls. 10,962,391 of the total. Detailed figures are as follows:—

	1917		1918	
		Tls.		Tls.
Antimony regulus ...	245,068 pls.	3,714,321	237,796 pls.	2.117,916
Antimony, crude ...	333.026	2.346.841	28.193	119.820
Antimony ore ...	63,813	237,702	7,939	21,810
Copper ingots ...	689.823	9.946.756	44.710	833.649
Iron Manufactures...	229,709	797.807	207.714	677.936
Iron, pig	2,432,904	5.288,786	2,804,024	16.731,097
Iron ore	5,113.182	1,018,479	6,261,062	1.359,596
Lead	12.378	164,411	7,670	122,541
Lead ore	230,700	774.659	15,493	49.158
Quicksilver	4.320	764,672	4,851	727,861
Tin, in slabs ...	195.025	12,137,492	145,032	11,009.067
Tin compound ...	1.681	27.767	3,290	22,217
Zinc (Spelter) ...	7,143	114.665	2,129	27,787
Zinc ore	3,771	7,126	2,739	3,296

	1917		1918	
		Tls.		Tls.
Metals and minerals (unclassed) ...	422,959	4,189,919	1,211,620	3,543,444
Ores (unclassed) ...	275,031	1,152,744	687,146	7,826,734

Japan was also the largest buyer under the heading of unclassed metals and minerals, accounting for Tls. 3,109,314 of the total.

After the general classifications of piecegoods and metals come numerous classifications listed as "Sundries." Only those which are of importance in the foreign trade are given in the list below:

	1917		1918	
		Tls.		Tls.
Aniseed	22,288 pls	429,427	23,575 pls	294,307
Arsenic	849	9,335	642	7,443
Bags	7,342,494 pcs	551,360	6,771,283 pcs	445,838
Beancake	13,473.588 pls	23,758,075	16,366,834 pls	29,882.829
Beans, yellow ...	7,927,582 pls.	15.274,479	6,371,111	14.339,023
Beans, other kinds...	1,771,490	3,452,109	1,726,886	3,689,918

(The beancake trade is one almost wholly in the hands of the Japanese, who took up Tls. 27,983.026 of the 1918 total; exports coming largely from Dairen, which port shipped Tls. 26,980,080 of the total. Japan, also, was a large buyer of yellow beans, taking Tls. 9,775,032 of the 1918 total; Dairen again being the largest port of export, with Tls. 11,755,056 of the total. The same country was the largest buyer of "beans, other kinds" with Tls. 3,179,254 of the total.)

	1917		1918	
		Tls.		Tls.
Bones	622,819	772,815	577,388	721.153
Bran	518,673	430,653	1,223,999	1,595.203
Bristles	64,181	6,171.638	71.611	6,682,464
Camphor	3,547	261,918	5,742	428.074
Cassia lignea ...	52,673	407,623	50,024	299,892
Cement	394,684	301,553	503,091	421,929
Cereals				
Wheat	1,557,601	3,276,805	1.815,461	4,021,652
Coal	1,575.627 ton	6,276.559	1,708.149 ton	8.146.896
Coke	68.057	575,810	93,483	1,145,837

(Japan took Tls. 3,644,917 and Korea Tls. 3,644,917 of the 1918 total; Chinwangtao was the leading port of export with Tls. 5,454,691. Japanese purchases of coke were Tls. 1,106,821.)

	1917		1918	
		Tls.		Tls.
Cotton, raw ...	832,463 pls.	20,035,862	1,292.094 pls.	37,887,337

(Purchases of cotton by Japan amounted to Tls. 35,603,220; by the United States, Tls. 1,682,849.)

	1917		1918	
		Tls.		Tls.
Eggs, albumen and yolk	405,019 pls.	11,999,684	289,357	9,307,227
Eggs, fresh and preserved	247,400 mille	1,870.297	209.867 mills	1,555.727
Eggs, frozen ...	35,671 pls.	448,089	13,074 pls.	190,261
Feathers	53,125	803,508	35,711	463,798
Fibres				
Coir	12.188	109.809	15,558	146,012
Hemp	148.691	1,645.286	148.634	1,817,771
Jute	85.045	451,935	84,702	459,839
Ramie	276.931	3,582,409	274,629	3,542,620
Firecrackers ...	89.994	2,719.058	69,272	2,197,142
Flour, wheat ...	798,031	2,292,382	2,011,899	8,410,557

(Great Britain was the largest buyer of flour, taking Tls. 3.822,481 of the total in 1918 as compared with Tls. 440,002 in 1917.)

Glus, cow	3,620 pls.	50.169	7,640 pls.	134,897
Grasscloth	15,783	1,940,452	14,292	1,915,812
Groundnuts				
Cake	55,960	96,306	83,711	160,079
In shell ...	102,665	355,648	43,440	160,571
Kernels ...	368,653	1,656,220	487,229	2,192,592

	1917			1918		
			Tls.			Tls.
Hair						
Horse	9,545		344,786	10,746		393,211
Other animals ...	6,496		89,088	6,800		71,052
Human ...	22,244		502,762	14,382		337,710
Indigo, liquid ...	78,148		655,646	83,642		692,394
Intestines			457,087			519,545
Lace			618,441			954,713
Lard	158.141		2.482.099	119.810		1,844,043
Leather	46.497		3.060.050	26.925		1,136.624
Liquorice	76.963		709.523	59.325		694.026
Mats	32,605.770	pcs.	1,908.445	20,096,732		1,145.908
Matting	72.124	rolls	550.383	52.216	rolls	437.388
Meats, fresh or frozen	395,521	pls.	2,984,084	293,015	pls.	2,706,870
Meats, prepared or preserved ...	72.754		1,168.364	84,958		1,327,487
Musk	15.954	Tls.	533.914	24.007	Tls.	446 655
Nutgalls	41,506	pls.	896.606	45,349	pls.	1,030,146
Oil						
Bean	1,891.353		18,196.125	2.277.167		24.981.249
Cottonseed ...	78.051		616.315	133.272		1,245.656
Groundnut ...	463 553		5.189.839	590.627		7,171.895
Rape seed ...	16.388		119 536	5.547		68.640
Sesamum seed...	8 904		119.086	20.622		221.363
Tea	15 706		174.035	23.524		264.433
Wood	401.361		4.835.908	488,852		5,975,926
Vegetable, other kinds	57.513		470.888	111.900		1,090.401
Essential ...	10.009		847.040	10.860		1,432.725
Potash	14.979		98.224	18,401		113,279
Seed						
Cotton	370.380		459.282	165.303		229.727
Linseed ...	139 888		428 458	88.084		296.751
Rape	430 694		1.590 833	670.126		2.279.718
Sesamum ...	223.200		1.100 536	234.103		1,173.384
Other kinds ...	491,702		1.404,422	265.994		659,858
Seedcake						
Rape	500.521		602.933	398.047		507.820
Other kinds ...	560.871		910.701	772.374		1,314,667
Silk						
Raw, white, not re-reeled and not steam filature	4,612		2,190.748	4,159		2,066,366
Raw, white, re-reeled ...	14,076		9.660.543	14,454		9,059.046
Raw, white, steam filature	69,003		53,301,251	60.994		47,769,888
Raw, yellow, not re-reeled and not steam filature	14,492		4,532.552	12,361		4,080.101
Raw, yellow, re-reeled ...	1,301		714.629	1,205		679,247
Raw, yellow, steam filature	4,100		2,735,911	3,193		2,108,064
Raw, wild, not filature ...	3,926		921,877	5.261		1,245,212
Raw, wild, fila-re-reeled and ture	14 310		5.091 092	23.327		7,674.002
Cocoons ...	33.623		1.857.501	32 740		2.620 424
Waste	114 828		6.505 409	128.718		9.228 712
Cocoons, refuse	27.807		675 039	43 145		1.103 409
Piecegoods ...	12.981		10.904 546	14 787		12.761.809
Pongees ...	12.228		6.325 220	19.772		6,149 438
Thread	247		135.691	266		153.623
Unclassed ...			419,369			322,674
Skins and Hides						
Buffalo and cow	477 099		17.367 572	395 638		13.470 676
Goat, untanned	11,735.579	pcs.	7,898.186	8.940,671		5,769,988
Horse, ass and mule	30.757	pls.	703.832	29 407	pls.	665.527
Sheep, undressed	1,721,823	pcs.	966,586	716,262	pcs.	449,665
Unclassed, undressed ...			72.112			21,582
Goat, tanned ...	425 291		431.547	1.006.916		835.406
Kid, dressed ...	20 457		4.541	131.206		30 842
Lamb, dressed	173 941		193.027	218.341		213.189
Dog, made-up ...	389.275		355.281	593,426		530,278
Goat, mats and rugs	70,818		90,848	133,145		159,010
Skins : furs						
Fox	13.093		80.579	25.349		143.618
Marmot ...	272.628		63.620	659.416		144.762
Raccoon ...	79,688		50.862	83.217		66.300
Sable				681		20,239
Weasel	627.748		128.404	490.446		101.450
Unclassed ...	1,894 467		571.701	2,289.880		815,678
Strawbraid	40 524	pls.	2 406 683	53.338	pls.	4.167.659
Tallow, animal ...	227.208		3.927.989	140.720		1,956.795
Tallow, vegetable ...	151,385		1,782.938	162,881		2,123,869

	1917		1918	
		Tls.		Tls.
Tea				
Black	472,272	12,395,822	174,962	5,731,286
Green	196,093	8,966,112	150,710	7,043,983
Brick, black ...	223,327	4,962 326	65,742	1,153.372
Brick, green ...	220,309	2,545,768	9,418	109,072
Thread and yarn, ramie	7,941	242,305	5,747	163,427
Tobacco leaf and stalk	148.653	1,468.440	189,001	2,196,446
Varnish	12,609	650,738	17,121	1,004,739
Walnuts				
In shell ...	31.064	150.507	9.529	49.977
Kernels ...	8.515	109.657	15.299	189.086
Wax, white ...	4.026	197.507	5.046	290.621
Wax, yellow ...	4,173	152,543	695	29,706
Wool				
Camel	33.734	1.298.002	38.318	1,542.849
Goat	13.641	469.430	12.606	419.110
Sheep	339,354	10.533,020	318.036	10,276.772

The imports of 1918 aggregated Tls. 554.893,082, after allowing for re-exports, while exports aggregated Tls. 485,883,031, making a grand total of 1,040,776.113. The 1917 figures were : Net imports 549,518,774; exports 462,931,630; total, Tls. 1,012,450,404.

In the table above the following abbreviations are used: Pls—piculs; Pcs—pieces; Tls—taels.

The F. M. S. Railways in 1918

The working of the Federated Malay States Railways during the year 1918 has produced, after allowing for a contribution of $537,006.78 to the Imperial Government for war purposes, a net profit of $3,399,358.19 compared with $4,168,322.06 in 1917, representing 3.12 per cent. on the total capital expenditure against 3.95 per cent in 1917. The principal factors in this decrease are (*a*) the reduction in passenger receipts resulting mainly from the curtailment of the Sunday passenger train service, (*b*) the general increase in wages and material costs.

In consequence of an outbreak of influenza during October and November the greatest difficulty was experienced in providing the necessary staff to keep open the main line stations. In order that this might be done, a number of stations were closed during the time of the epidemic. The maximum number of employes off duty because of sickness at one time was 263.

On and from July 1, through train service with Siam, by rail viâ Padang Besar, was inaugurated. However, the shortage of engines and rolling stock on the Federated Malay States Railways and Siamese Railways has interfered with the development of through traffic between the two countries.

New lines opened for traffic during the year were between Bukit Ketri and Padang Besar (11 miles 66 chains) and between Batu Arang and Batang Berjuntai (7 miles 01 chain). The total mileage of running lines (reduced to single track) open on December 31 was 1,001 miles 76 chains; and of running lines and sidings 1,128 miles 9 chains as compared with 982 miles 28 chains, and 1,102 miles 77 chains at the end of 1917.

The total capital expenditure to December 31 is $108,972,124.34. The expenditure during the year was $3,584,111.30, of which $1,229,881.92 was on account of open lines and $2,354,229.38 on lines not open for traffic (including widenings and additions).

The receipts from all sources amounted to $13,106,512.67, a decrease of 0.63 per cent. as compared with 1917 figures. The revenue expenditure on all accounts excepting the appropriation for war purposes amounted to $9,170,147.70 compared with $8,164,363.72, an increase of $1,005,783.98 or 12.32 per cent.

Passenger receipts show a reduction of $672,359.34, with which appears a decrease of 2,681,061 in the number of passengers carried. On the other hand, every description of goods train traffic shows an increase, the total being $575,218.63 (12.36 per cent.)—an amount which almost balances the reduction in passenger train traffic. The number of tons carried was 1,449,973 compared with 1,293,404 and heads of livestock carried were 139,390 compared with 144,809 in 1917. Goods train receipts provided 42.91 per cent. of the total traffic receipts as compared with 37.94 per cent. in the previous year.

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

Canton Tramway Under Way.—The franchise of the street railway was formally granted to the Canton Tramway Syndicate on August 6, when the agreement was signed between the Directors of the Canton Municipality, Yang Wing-tai and Ngai Pong-ping, and representatives of the Syndicate, Judge Peter Hing, Sam Kee, and T. E. MacInnes. To operate the railway, however, there will be another concern, the Kuantung Tramway Co., Ld., a corporation registered at Hongkong, headed by Judge Peter Hing and Eng Hok-fong, a Chinese capitalist. Subscriptions to the Company will be open to both Chinese and foreigners at $40 a share.

Shanghai Tramways.—The following is the Traffic Return of the Shanghai Tramways (Foreign Settlement) for the month of July, 1919, and for 7 months ended 31st July, 1919, with figures for the corresponding periods last year :—

	July, 1919.	July, 1918.
Gross Receipts	$175,115.30	$142,816.39
Loss by currency depreciation	44,106.03	32,869.18
Effective Receipts ...	$131,009.27	$109,947.21
	7 Months ended 31st July, 1919.	7 Months ended 31st July, 1918.
Gross Receipts	$1,141,456.41	$957,472.95
Loss by currency depreciation	281,130.10	213,177.13
Effective Receipts ..	$860,326.31	$744,295.82

Recent weekly figures have been as follows :

	Gross Receipts :	Effective Receipts :	Effective receipts 1918 :
August 6 ...	$39,872.04	$29,785.70	$25,520.46
August 13 ...	42,829.44	31,949.01	25,075.20
August 20 ...	41.921.54	31,237.08	23.455.32

Revenue from Government Railways.—It is published by the Railway Board that the total receipts of the Government Railways from April to June, amounted to Yen 38.678,018 in passenger fares and Yen 32.469.450 in freights, making a total of Yen 71,147,468. As compared with the corresponding period of the previous year, these figures show an increase of Yen 11,103,896 in fares and Yen 6,801,348 in freights, making a total increase Yen 17.905,244.

Government Railways.—The number of passengers and the volume of freights carried by the Japanese government railways in the course of the fiscal year 1918 shows a great increase as compared with the preceding year. An official report to hand says that receipts from passengers during the year under review totalled Y.104,135,074. showing an increase of 22 per cent. as against the preceding year, and those from freights Y.108,838,655, an increase of 29 per cent. The number of passengers carried during the same year totalled 288,061,584 (an increase of 24 per cent. as against the preceding year) and the freight carried reached 53,313,720 tons, showing an increase of 12 per cent. The receipts from passengers and freight during the three months ending in June this year totalled Y.39,678,018 and Y.32,469,450 respectively, the number of passengers carried standing at 85,250,540 and the freights carried amounting to 14,889,733 tons.

SHIPPING

E. & A. S. S. Co. and P. & O.—The Eastern & Australian Steamship Company has been taken over by the P. & O. The E. & A. maintains a service between Australia, China and Japan, and prior to the War had four steamers on the run. A considerable change in the situation is expected now that a line of the P. & O.'s standing has entered the run, the greater authority of the Freight Conference having formerly rested with the N. Y. K. and the O. S. K.

China Mail Gets Back Nile.—The China Mail Steamship Company will shortly place on the cross-Pacific run the s.s. *Nile*, which has been serving as a transport for the British Government during the War. The vessel is of 11,000 tons displacement with a speed of 17 knots, and has accommodation for 190 cabin, 30 second and about 500 third-class passengers.

New Local Passenger Rates in East.—The trans-Pacific steamship lines have decided to collect two Mexican dollars for each gold dollar of the local passenger rates now in force between Japanese ports, Shanghai, Hongkong and Manila, where formerly tickets were sold at the day's rate of exchange. For example, the fare between Shanghai and Hongkong, at G.$30, amounted to about Mex.$33 at current rate of exchange, but will now be collected at Mex. $60.

New N. Y. K. Steamers.—In order to make good the shortage of tonnage now being experienced owing to its expanded activity, the N.Y.K. has concluded a contract with the Mitsubishi Dockyard for the purchase of three 11,000-ton steamers which will be constructed by the end of this year. The company has also purchased three steamers now under construction from the Suzuki firm besides a ship of 8,500 tons, which will be launched at the Mitsubishi Dockyard in April or May next year. Two other steamers are now under construction at the Urga Dockyard. Altogether the N.Y.K. will get ten new steamers during this and next year.

O. S. K. Declares Dividend.—An ordinary general meeting of shareholders of the Osaka Shosen Kaisha was held on July 24 when the following report for the first half of this year was submitted and approved :—

	Yen
Net profit	12,169,960.13
Reserve	609,000.00
Bonuses	305,000.00
Balance	11,255,960.13
Brought over from previous term	2,527,087.21
Total	13,783,047.34
Reserve for equalization of dividend	2,000,000.00
Reserve for reconstruction of offices	1,000,000.00
Dividend (10 per cent. per annum)	1,868,750.00
Special dividend (30 per cent)	5,606,250.00
Allowances to retiring officials	1,000,000.00
Carried forward to next term	2,308,047.34

O. S. K. Increases Fleet.—Over 100,000 tons of new freighters will be acquired by the Osaka Shosen Kaisha by next June. Under the building programme framed by the company during the war, a dozen ships have been ordered from the Mitsubishi Shipyard and the Osaka Ironworks. At the Mitsubishi Shipyard the *Alaska Maru*, 10,500 tons, will be completed this month, while the *Madras Maru*, 10,500 tons, will be launched at the Osaka Ironworks in October. In December a steamer of 8,800 tons, the name of which has not yet been chosen, will be launched also at the Osaka Ironworks. In addition, eight ships, totalling 80,200 tons, will be launched between next February and June. The *Alaska Maru* will be shortly taken by the Osaka Shosen Kaisha, and will be despatched to Europe as an extra steamer early in September.

Japanese-Mexican Shipping Agreement.—It is understood that an agreement has been reached between the Japanese and Mexican governments by which Japanese shipyards will commission eight steamers for Mexican service, four for overseas and four for the Mexican coast, all of which will fly the Mexican flag.

SHIPBUILDING

Shanghai Shipbuilding.—Speaking at the annual meeting of the Shanghai Dock & Engineering Co., Mr. John Prentice stated that at present there are 11 ships being built in Shanghai of 63,000 tons deadweight. It is expected that Norway will come to Shanghai for a number of ships in the immediate future, and a certain number of orders are anticipated from Chinese—the China Merchants Company, for example, having spoken of two extra ships for some time.

Shipbuilding for U. S.—It is stated by the Japanese press that the 30 steamers, aggregating 245.900 tons, now being built under the second agreement reached last year between the American Government and the leading Japanese shipbuilders whereby Japan would build ships in return for metals, will be delayed due to the modification of the designs. It is expected that the vessels will be completed before April of next year.

Japanese Shipbuilding.—Official investigations show that the number of ships of 1,000 tons and above launched in Japan during the first half of this year totalled 69 with an aggregate tonnage of 293,433. The figures represent a decrease of 14 in the number of vessels but the tonnage shows an increase of 65,218, as against returns for the corresponding period last year.

INDUSTRY

Growth of Cotton Factories in China.—Plants under way and under order, negotiated with a single American firm in Shanghai, number twenty. With the boycott against Japanese goods has come an enormous demand for Chinese manufactures, particularly cotton goods and yarn, and this has given an impetus to the placing of orders for spinning and weaving machinery.

Sincere Company to Erect Factory.—The shareholders of the Sincere Company, a Chinese firm which operates huge department stores at Shanghai, Hongkong, Canton and other places, are planning on the establishment of a factory in Canton to promote the manufacture of native goods. It is planned to invest ten million dollars in the enterprise.

New Iceworks for Canton.—The Hongkong Dairy Farm Co. is reported to be promoting an ice factory with a capital of $400,000 for Canton. Ice at present is imported from Hongkong and sells in Canton at the rate of three and one-half pounds for 10 cents; it is hoped to manufacture ice for one cent a pound with the new factory, which will be located on Shameen.

Hunan Cotton Mill Sold.—The native press reports that the First Cotton Mill in Hunan has been sold by General Chang Chin-yao to the Changsha Chamber of Commerce for $1,400,000. The mill was formed by General Tan Yen-kai when he was Military Governor of Hunan in 1912, the machinery being purchased through Arnhold, Karberg & Co. and delivered in 1913, but the installation of the plant was delayed until last winter because of the struggle between the North and South. The plant operates 40,000 spindles.

Hangchow Extends Lighting Facilities.—The Hangchow (Chekiang) Electric Company has purchased in Shanghai additional machinery for increasing the output of current. Five thousand additional lamps will be provided for.

Electric Light for Paotingfu.—Paotingfu (Chihli) has an electric light plant under way. Part of the machinery has already arrived.

Shanghai Cotton Manufacturing Co.—A balance of Tls. 1,362,014.01 has been divided as follows: Dividend of Tls. 18 on shares of Tls. 50, Tls. 720,000; to reserve fund, Tls. 550,000; allowance for depreciation, Tls. 60,379.38; carried forward, Tls. 31,634.63.

Wireless Factory for Shanghai.—Although it may be some time yet before the scheme is practically in progress, arrangements are proceeding in connexion with the Chinese National Wireless Co., formed by the Government and the Marconi Company. The contract which has been signed provides for a capital of £700,000, each party to subscribe half, for the purpose of establishing a factory for the manufacture and repair of wireless equipment. It has been decided to establish the factory at Shanghai, and later there may be auxiliary works at Peking or Tientsin. Special attention will be given to the needs of shipping, and developments in other directions, probably, with the exception of dynamos, complete equipment will be constructed locally, by Chinese mechanics under the direction of Marconi engineers.

New Japanese Cotton Mills in China.—According to Japanese reports the Japanese spinning and weaving concerns are making extensive plans to enlarge their present plants in China. The Nippon Boseki Kaisha has already bought the mills at Tsingtau and the Hung Yuan Mill at Shanghai, giving them an addition of 52,000 spindles and 500 looms. It is said that three other Japanese concerns are looking for mill sites in Shanghai.

Ramie Fibre.—American inventors are said to have perfected the means of spinning ramie on ordinary cotton machinery. If this be true it is a most important development, but the real obstacle to the more extended use of ramie is the difficulty of treating the raw material and dividing the filasse from the gum according to the "North-China Daily News." It has been authoritatively stated that hitherto no efficient substitute for the Chinaman's finger-nail in working up the filasse has yet been found. It is undoubtedly a fact that there is no comparison whatever between textiles made from the natural fibre and these made from ramie that has been chemically treated for the extraction of the gum. Although the Germans have made progress with ramie, there is still ample room for improvement. The history of experiments with this fibre has been a long record of financial disaster, but in spite of that the lure of this most beautiful, yet strong, lustrous, and dainty textile will doubtless induce others to experiment with it, and ultimately there can be little doubt that the world will greatly benefit.

Korean Tobacco Monopoly.—The Government General of Chosen is planning to undertake the tobacco monopoly from the next fiscal year, and a private agreement is reported to have been concluded with the East Asia Tobacco Co. The recent increase of the Company's capital to ten million yen is to extend the company's operations in Manchuria and China after the transfer of the business in Chosen to the Government General. A new branch will be founded at Mukden. The annual income of the Government General from the above enterprise will total about four million yen per annum and will serve to make up in part the decrease of income from the abolition of the Customs duty.

Japanese Filatures.—According to the Department of Agriculture and Commerce the number of silk filatures having ten reeling machines and over throughout Japan total 2,834, the kettles installed therein numbering 278,493.

Toa Tobacco Company.—The Oriental (Toa) Tobacco Company has decided to increase its capital from 3 to 10 million yen.

Tainan Sugar Co.—The Tainan Sugar Manufacturing Company has put forward the following accounts for the term:—

	Yen
Net profit for the term	1,897,071
Brought over from previous term	62,688
Total	1,959,760
Legal reserve	100,000
Redemption fund for properties...	200,000
Pension fund for employees ...	37,900
Dividend (10 per cent. per annum)	1,012,500
Special dividend (2 per cent. per annum)	202,500
Bonuses	150,000
Carried forward to next term ...	256,860

Oriental Sugar Co.'s Profits.—The Toyo Seito Kaisha (Oriental Sugar Manufacturing Company) held a general meeting of shareholders at the Tokyo Chamber of Commerce on July 25, and the following accounts for this term were declared and approved:—

	Yen
Net profit for the term	4,352,624
Brought over from previous term	516,303
Total	4,868,928
Legal reserve	222,500
Special reserve	350,000
Redemption fund for machineries and buildings	156,500
Pension fund for employees ...	150,000
Bonuses and social allowances ...	350,000
Dividend (20 per cent. per annum)	2,022,000
Special dividend (10 per cent. per annum)	1,011,000
Carried forward to next term...	606,928

Workmen Discharged in Japan.—According to investigations made by the Department of Agriculture and Commerce the number of workmen discharged during May last throughout Japan totalled 4,003 comprising 2,566 males and 1,437 females, the factories concerned numbering 274. The following table shows particulars:—

Factories	Factories concerned	No. of workmen		
		Male	Female	Total
Dyeing and weaving...	46	157	506	663
Machinery	130	1,620	237	1,857
Chemical	67	475	309	784
Foodstuffs	9	103	172	275
Miscellaneous	20	173	213	386
Special	2	38	—	38
Total	274	2,566	1,437	4,003

Again the workmen discharged from factories in Japan since the conclusion of the armistice number 45,924 comprising 11,629 females, and the factories concerned have reached 1,923.

CONSTRUCTION

Glen Line to Build in Shanghai.—The Glen Line, Ltd., will shortly erect a modern office building at the corner of the Bund and Peking Road, Shanghai; having acquired the property formerly owned by Siemssen & Co.

New Building for Shanghai.—A modern building of four stories to be used for offices and godowns will be built on the western side of Kiangse Road, north of Peking Road, by the Foster-McClellan Company. The structure will have a frontage of 175-feet on Kiangse Road. The company has purchased three mow of land at a reported price of Tls. 35,000 per mow.

Bund Reclamation at Shanghai.—Work on the Bund reclamation at Shanghai will start soon and is to be completed within six months. The scheme provides for a substantial area along the Bund foreshore such as will permit the construction between Peking Road and Avenue Edouard VII of a thoroughfare of approximately 120-feet in width laid out so as to provide in addition to the existing roadway a vehicle parking space 18-feet wide, on the outside of which will be a through carriage way 30-feet in width and a 15-foot path for pedestrians.

Big Shanghai Garage Under Way.—The Central Garage will shortly begin construction of a three-story, reinforced structure on Hongkong Road, Shanghai. Fireproof storage boxes will be provided for storage of motor-cars on the ground floor, while the other floors will be used for repairing and for body building.

MISCELLANEOUS

China's Wireless Scheme.—There has recently arrived at Shanghai the complete equipment of the Marconi wireless installation which is to link Peking with the far west. The first of the three wireless stations to be erected will be at Lanchow-fu, between which city and Peking the land line is safe and efficient. The second station will be at Urumchi, and the third at Kashgar, the total distance being 1,529 direct miles. From the railhead at Kalgan the material, weighing some 800 tons, will be transported overland by means of carts and camels. Under good conditions the stations will have a radius of 1,200 miles. Construction will be supervised by Major S. T. Dockray, who is now in Peking.

Sewage Disposal in Shanghai.—Another chapter has been added to the investigation of a sewage disposal system for Shanghai in the report of Mr. C. H. Godfrey, Municipal Engineer, published in a special issue of the Municipal Gazette on August 22. Preliminary measures are outlined by which the cesspool contents of the Central District area would be dealt with in such a manner that the greater portion of any works involved thereby would form part of a more extensive system that may eventually be installed.

Automatic Phones in the Far East.—Harbin is to adopt the automatic telephone in the near future and it is stated that the Manila automatic system, announced recently, will be in operation soon. At Harbin an exchange of 3,000 instruments is to be installed and the necessary equipment has been ordered and an expert engineer is expected shortly to take up the work of establishing the system. The exchange will be under the control of the Chinese Eastern Railway, which controls all public utility services within sixteen miles to each side of its line.

A. P. Co. at Tsingtao.—It is reported that the Japanese authorities at Tsingtao have ordered the Asiatic Petroleum Company to quit its present site, on the ground that the presence of tanks and pipe lines at the wharf is deterimental to the public interest.

China's New Aeroplanes to Arrive Shortly.—Six of the new Handley Page aeroplanes will shortly arrive in China. They are of the bomber type, later adapted to passenger service, and are equipped with two Rolls-Royce engines, with carrying space for twenty passengers. Col. Smallwood will advise the Chinese on the placing of aerodromes, of air-routes, and stations for the contemplated mail and passenger services. He will be followed by a crew of riggers, mechanics and pilots, who will train the Chinese aviators who have practised on the old French military machines of the Chinese government.

Free Transport of Rice.—A result of the dearness of rice in Japan has been the decision of the Railway Board of Japan to carry rice free of charge for one month between July 24 and August 25. The Board has decided also to carry barley, wheat, rye, potatoes, salt, dried fish and vegetables at 30 per cent. discount during the same period.

New Customs Regulation.—Hereafter declarations will be filled in by incoming passengers at Shanghai. Passengers will be allowed to bring in free of duty necessary and appropriate wearing apparel, etc., but all other articles in their baggage, including samples, must be declared. The import of arms and munitions of war, explosives, bombs, salt, opium and its derivatives, hypodermic syringes and obscene pictures, is prohibited.

New Japan-U. S. Cable.—At a meeting of business men in Tokyo it was decided to float a Y.50,000,000 company for the purpose of laying a cable line between the United States and Japan, the need of which has been felt for some time.

COMMERCE

Lower Cable Rates to America.—A considerable reduction in cable rates across the Pacific will come into effect on September 1. The reduction will be effective on both inward and outward messages and will reduce existing rates by approximately 20 per cent. The rate on cable messages from San Francisco to Manila will be reduced from $1 to 80 cents a word, from San Francisco to China from $1.10 to 88 cents a word, and from San Francisco to Japan from $1.21 to 88 cents a word, the last two reductions, however, being contingent on proportionate reductions in terminal charges in Japan and China, which are expected. Mr. Mackay, the president of the Commercial Cable Telegraph Lines, states that the Company is confident that present delays on the Pacific cable will disappear upon the return of normal conditions, and that if it turns out that the traffic warrants it a second cable will be promptly laid.

Boycott and Japanese Coal.—In a recent issue of Wheelock & Co.'s coal market report, issued at Shanghai, the notation is made on the Japanese coal market. "As the Chinese are still continuing the boycott of all things Japanese there is naturally no business doing with native dealers in Japanese coal so that there is absolutely nothing to report." As a matter of fact, the effect of the boycott is being felt in many Japanese quarters.

American Analytical Laboratory for China.—The American Chamber of Commerce of China has under way an investigation among its members to determine the demand for an analytical laboratory in Shanghai to pass upon goods exported to the United States. It is desired to found a laboratory which would furnish analyses recognizable by the Government.

New Port Rates for Shanghai.—Beginning September 1 an increase of 15 per cent. will be charged on existing wharfage, landing and storage rates, except for goods for which landing accounts have been issued. Rebates hitherto allowed will be withdrawn after August 31, excepting under existing contracts made in writing and still in force on that date. A rebate of 7½ per cent will be granted at the Pootung wharves on the receiving, storing and delivery charges. Revised tariffs for wharfage, landing and storage are being drawn up and will be published in November, the new tariffs coming into force from January 1.

Andersen, Meyer & Co.'s New Branch.—Messrs. Andersen, Meyer & Co. are opening a branch at Chefoo, of which Mr. Frank W. Smith will be manager.

DuPonts to Sell Peace Products in China.—The E. J. DuPont de Nemours Export Company of New York will shortly open offices in Shanghai for the sale of their peace time products. Mr. T. E. Doremus will be the representative of the DuPont interests in the Far East, and will be assisted by Mr. H. B. Campbell and Mr. N. I. de Trubnikov.

Japanese Raw Silk Exports.—Raw silk exported from Japan in the first six months of the year amounted to Yen 209,260,000, showing an increase of 45,008,000 over the corresponding period last year. The increase is due mostly to the advance of price; the volume exported was rather less.

MINING

Seoul Mining Co.—The Suan mill operated throughout the month of July, treating a total of 5,360 tons of ore for a gross production of Y.63,280. Milling operations were resumed at Tulmichung in August.

Kailan Mining Administration.—Recent weekly figures of output and sales were as follows :—

Week ending	Output	Sales
July 26	76,247 tons	71,185 tons
August 2	79,513	66,386
August 9	80,034	43,290
August 16	73,477	70,758

Chinese Mineral Deposits.—China is rich in mineral resources, and there are indications of considerable progress being made in the near future in mining and smelting. Tin is at present the most important metal produced in China. Occurrences of copper ore are numerous, but so far few have been proved of value; the present yearly production of copper is about 2,000 tons. Zinc, lead and silver, which are usually associated with one another, are produced. About 6,000 tons of zinc are obtained yearly, with some 5,000 tons of lead and about 50,000 oz. of silver. The best known deposit is that of the Government mine of Shuikoushan, in Hunan province. In output of antimony China occupies a unique position, the province of Hunan having produced during the last ten years probably nearly half the world's supplies. The demand for antimony for war purposes has, of course, fallen off, but there will still be a good outlet for the metal in the manufacture of anti-friction alloys and type metal.

China is remarkably rich in coal, and in no province are occurrences of coal unknown. Both bituminous coal and anthracite are worked, but the latter is most abundant. Both kinds are of excellent quality, the anthracite of Shansi and the bituminous coal of Shantung comparing well with the best of their kind in other parts of the world. Consumption of coal in China is at present remarkably small in relation to the population, but as railway facilities are provided production is bound to increase. The iron industry is still very backward, though suitable ores are not lacking.

Hunan Antimony Mines.—The Ministry of Agriculture and Commerce has decided to increase the capital with which to work the antimony mines in Hunan and the antimony factories confiscated from the Germans.

Copper Production in Japan.—According to a report to hand, copper produced throughout Japan during the twelve months ended April last totalled 89,311 tons. During the period the mineral to the amount of 898 tons was imported and 31.015 tons exported, while the amount consumed totalled 57,184 tons. Compared with the preceding twelve months a decrease of 23,343 tons was noticed in output, of 7,571 tons in imports, of 21,855 tons in exports, and of 8,578 tons in consumption. The decrease in output is attributed to the great advance of wages, and that in imports to the suspention of imports from Shantung of bronze coins. Exports of copper during the first four months of this year amounted to 11,606 tons showing a decrease of 541 tons as against the same period last and the particulars are as follows :—

Nationality.	Jan.-April 1919	Jan.-April 1918
China	7,943 tons	1,443 tons
Kwantung	728	82
British India	510	992
Siberia	—	139
England	202	2,787
France	141	4,143
America	—	37
Other States	2,082	3,513

Demand for Coal in Japan.—A shortage is being felt in the supply of first class coal and quotations are gradually advancing. In these circumstances the strike by coal miners in England will no doubt badly affect the coal market in Japan. The total output of coal throughout Japan during 1918 amounted to 27,740,000 tons and that imported from China and South Seas Islands amounted to 1,105,000 tons, while the exports during the year under review stood at 2,827,000 tons. Again, the coal produced in Japan during 1916 totalled 20,980,000 tons and exports during 1915 and 1916 3,558,000 tons and 2,901,000 tons respectively. In addition to the amount, 750,000 tons were exported in the course of 1916, the supply being made to foreign ships calling at Japanese ports. Under the circumstances imports during 1915 and 1916 amounted to 572,000 tons and 610,000 tons respectively. Thus the output of coal during 1918 showed an increase of 7 million tons as against 1916 but the exports showed neither increase nor decrease while the imports represented a decrease by one-half. From these facts it is to be inferred that the consumption of coal in Japan has shown an increase of about 800,000 tons a year. The increase in consumption is partly attributed to the decrease in the output of coal in Europe and America during the war and partly to the great development in various industries in this country.

IRON & STEEL

Japanese Iron Market.—Import prices of iron in Japan are ruling as follows : bar, Y.198 for American, Y.240 for English, and Y.235 for Japanese ; plate, Y.220 for American, Y.250 for English, and Y.300 for Japanese : pig, Y.125 for American, Y.135 for English, and Y.150 for Japanese.

Kobe Steel Works.—The Kobe Steel Works made a net profit of Y.2,114.264 in the term just closed, of which Y.625,000 will be used in paying a 20 per cent. dividend.

Toyo Ironworks Increasing Capital.—The Toyo Ironworks, in Kyushu, has decided to make a third call on its shares, this time amounting to ten million yen which must be paid in by September 1, for the purpose of constructing a harbor in Obata, near Wakamatsu, for the purpose of facilitating the import and export of materials and manufactures.

Nippon Steel Works.—The Nippon Steel Works at Muroran has just declared dividends at 15 per cent. per annum for the past six months. The company's net profit for the months was up to Y.2,001,954 against Y.2,029,302 for the previous six months.

Business of the Osaka Ironworks.—A general meeting of shareholders of the Osaka Ironworks was held at the Osaka Chamber of Commerce on July 26 when the following report for the last business year was submitted and approved :—

	Yen
Net profit for the term ...	...4,567.565.29
Brought over from previous term...	375,700.96
Total	...4,943,270.25
Legal reserve	750,000.00
Reserve for equalization of dividend	...2,000,000.00
Allowances for retiring employees...	100,000.00
Reserve for relief of injured persons	100,000.00
Ordinary dividend (10 per cent.)...	575,000.00
Special dividend (20 per cent.) ...	1,500,000.00
Carried forward to next term ...	438,220.25

FINANCIAL

Park Union Bank Opens at Yokohama.—The first financial organization in Japan which represents combined American and Canadian capital was launched recently when the Park Union Foreign Banking Corporation opened the doors of its bank at Yokohama. The bank is the result of a union for foreign business of the very strong interests of the National Park Bank of New York and the Union Bank of Canada.

Yokohama Specie Bank Enlarging Capital.—In order to increase its capital from 48 to 100 million yen, the Yokohama Specie Bank is inviting subscription to 40,000 shares of Yen 100 face value.

Japan Hypothec Bank.—Business returns of the Japan Hypothec Bank for the first half of this year were as follows :—

	Yen
Net profit for the term ...	...2,021,562
Brought over from previous term	425,961
Total	...2,447,524
Sinking fund	320,000
Dividend-equalization fund ...	80,000
First dividend for new shares (5 per cent. per annum) ...	500,000
Second dividend for new shares (5 per cent. per annum) ...	500,000
First dividend for old shares (5 per cent. per annum)	187,500
Second dividend for old shares (5 per cent. per annum)	187,500
Bonuses	95,000
Special reserve	150,000
Carried forward to next term ...	427,524

Exchequer Bonds Oversubscribed.—It is stated that subscriptions for a recent issue of extraordinary exchequer bonds of the Japanese Government reached Y.113,000,000, the amount of the issue being Y.80,000,000. Of the amount Tokyo took Y.52,700,000.

Bank of Chosen.—The twentieth general meeting of shareholders of the Bank of Chosen was held at the Bankers' Club in Tokyo recently, when the following report for the last term was submitted and approved :—

Net profit	...Y.1,988,525.85
Brought over from previous term ...	361,033.03
Total	2,349,558.88
Reserve	550,000.00
Dividend equalization fund	520,000.00
Bonuses	85,000.00
Dividend to old shares (6% per annum)	600,000.00
Dividend to new shares (6% per annum)	196,027.39
Second dividend to old shares (3%)	300,000.00
Second dividend to new shares (3%)	98.013.69
Paid to government	56,309.24
Carried forward to next term ...	412,208.56

Chosen Industrial Bank.—The Chosen Industrial Bank has made arrangements to issue debentures to the amount of ten million yen under the following terms :—

Issue amount : Y.10,000,000.
Interest : 7 per cent. per annum.
Issue price : Y.100 par Y.100.
Redemption : After being left unredeemed until November 30, 1921, a sum of not less than Y.200,000 may be redeemed in five following years, redemption taking place twice a year.
Subscription { closes : August 30, 1919.
{ opens : August 25.
Earnest money : Y.3 par Y.100.

Bank of Japan.—At the 74th general meeting of shareholders of the Bank of Japan, the following report for the first half of this year was submitted and approved :—

Dividend to old shares (6% per annum)	Y.900,000
Dividend to new shares (6% per annum)	225,000
Reserve	1,000,000
Special reserve	10,000
Bonuses, etc.	238,000
Second dividend to old shares	900,000
Second dividend to new shares	225,000
Carried forward to next term	2,053,201
Total	...Y.5,551,201